

THE EFFECT OF PREKINDERGARTEN EXPERIENCES ON THE
INTELLECTUAL AND ACADEMIC PERFORMANCE
OF CULTURALLY DEPRIVED CHILDREN

An Abstract of a Dissertation by
Ronald Overt Huff
May 1977
Drake University
Advisor: Charles Rowley

The problem. The purpose of the study was to examine the effect of a formal prekindergarten education program on culturally deprived children. Retention of intellectual growth due to prekindergarten treatment was examined. The specific aspects of reading readiness, reading and mathematics achievement, measured intelligence, visual motor skills, language usage, and concept formation among the different groups of children were also investigated.

Procedure. Subjects were identified for the study by meeting specific eligibility criteria of the regulations as set down by Title I, Elementary and Secondary Education Act legislation and who resided in a midwestern school system during the period beginning with the school year 1973-74 and ending with the school year 1975-76. The first project year included an experimental school-based group. Change in measured intelligence was determined for this group by comparing scores taken at the time of beginning one year's participation in the project and at the end of grade one.

During the second project year, a comparison between an experimental school-based group and a control group was made regarding reading and mathematics achievement change and status in reading readiness. During the third project year, comparisons were made between an experimental school-based group, an experimental home-based group, and a control group regarding differences in measured intelligence, visual motor skills, language usage, and concept formation.

Findings. For the experimental group from the first project year, the analysis indicated no change regarding measured intelligence. In the second project year, the analysis indicated no significant difference between the experimental and control groups regarding changes in reading or mathematics achievement, or in reading readiness status. For the third project year, a comparison between the two experimental groups and the control group indicated the following ($p < .05$): the performance of the school-based group surpassed that of the control group in measured intelligence; there was no significant differences among the three groups regarding a comparison of visual motor skills; the performance of the school-based group surpassed that of

the home-based group and the control group regarding language usage; and the performance of the school-based group surpassed that of the home-based group regarding concept formation.

Conclusions. The findings indicated the following conclusions: (1) Children who attend a school-based pre-kindergarten educational program benefit more in measured intelligence and language usage, but not in visual motor skills, over children who do not participate in any pre-kindergarten educational program; (2) Children who attend a school-based prekindergarten educational program benefit more in language usage and concept formation, but not in measured intelligence or visual motor skills, than do children who participate in a home-based prekindergarten educational program; (3) Children who attend a prekindergarten educational program do not show significantly greater growth in reading or mathematics achievement, nor in reading readiness status than children who do not participate in any prekindergarten educational program by the time they reach the end of their kindergarten year; (4) Children who attend a prekindergarten program do not show a change in measured intelligence from the beginning of the prekindergarten year to the end of the first grade.

Recommendations. Recommendations included: (1) If a school district is considering the implementation of a prekindergarten program, it would appear that the school-based approach is the most effective; (2) All school districts should utilize an evaluation procedure similar to that used in this study in appraising prekindergarten programs; (3) Future studies should consider the measurement of human characteristics other than those of the cognitive area.

THE EFFECT OF PREKINDERGARTEN EXPERIENCES ON THE
INTELLECTUAL AND ACADEMIC PERFORMANCE
OF CULTURALLY DEPRIVED CHILDREN

A Dissertation
Presented to
The School of Graduate Studies
Drake University

In Partial Fulfillment
of the Requirements for the Degree
Doctor of Education

by
Ronald Overt Huff

May 1977

THE EFFECT OF PREKINDERGARTEN EXPERIENCES ON THE
INTELLECTUAL AND ACADEMIC PERFORMANCE
OF CULTURALLY DEPRIVED CHILDREN

by

Ronald Overt Huff

Approved by Committee:

Charles D. Rowley
Chairman

Richard R. Brooks
Co-Chairman

Richard M. Angell

Lewis M. Nulley

Evel L. Canfield
Dean of the School of Graduate Studies

ACKNOWLEDGEMENTS

The writer wishes to express his appreciation to those individuals who assisted in the investigation of the study. Gratitude for their professional assistance is extended to the writer's advisory committee, Dr. Charles D. Rowley, major advisor, Dr. Richard D. Brooks, second advisor, Dr. Richard H. Lampshire, Dr. Terry L. Penniman, and Dr. Lewis J. McNurlen. The writer is particularly grateful to Professors Rowley and Brooks for their many hours of time and energy extended and untiring belief in the value of the study.

Special thanks is also given to the project staff of the local school district sponsoring the prekindergarten program. Their assistance made the investigation possible.

The writer is especially indebted to his wife, Sharon, and to his daughter and son, Kelly Ann and Brian, for their understanding, patience, and sacrifices of many otherwise enjoyable activities. Their encouragement was important in the completion of the study.

TABLE OF CONTENTS

	Page
LIST OF TABLES	vi
 Chapter	
1. BACKGROUND AND RATIONALE	1
RATIONALE FOR THE STUDY	3
DEFINITION OF TERMS	6
STATEMENT OF PROBLEM	9
HYPOTHESES OF THE STUDY	10
DESIGN OF THE INVESTIGATION	12
ASSUMPTIONS AND SCOPE OF THE STUDY	17
DELIMITATIONS	18
ORGANIZATION OF THE STUDY	19
2. REVIEW OF THE LITERATURE	20
INTRODUCTION	20
EARLY CHILDHOOD EDUCATION DEFINED	20
THEORETICAL AND HISTORICAL CONSTRUCTS OF EARLY CHILDHOOD EDUCATION	25
Philosophical Basis for Early Childhood Education	25
Philosophical Conflicts in Early Childhood Education	29
The Growth of Early Childhood Education	36
Overview of Current Developments	38
Parental Involvement	50
EFFECTIVENESS OF EARLY CHILDHOOD EDUCATION	55
Opponents of Prekindergarten Education	56

Chapter	Page
Proponents of Prekindergarten Education . .	62
RELATED RESEARCH IN EARLY CHILDHOOD EDUCATION	68
Studies Reporting the Effects of a Prekindergarten Experience on Children .	69
Summary of Reported Studies	82
3. METHODOLOGY AND DESIGN	84
DESIGN OF THE STUDY	84
PROJECT DESCRIPTION	87
SELECTION OF THE POPULATION	92
THE SELECTION OF INSTRUMENTS	98
STATISTICAL DESIGN	105
CHAPTER SUMMARY	115
4. ANALYSIS OF DATA	117
1973-74 EARLY CHILDHOOD PROGRAM	119
1974-1975 EARLY CHILDHOOD PROGRAM	120
1975-1976 EARLY CHILDHOOD PROGRAM	124
CHAPTER SUMMARY	131
5. SUMMARY, CONCLUSIONS AND RECOMMENDATIONS . . .	134
PROCEDURES	134
FINDINGS	137
CONCLUSIONS	140
RECOMMENDATIONS	142
BIBLIOGRAPHY	145
APPENDIX A. EXCERPTS FROM THE REGULATIONS OF TITLE I OF THE ELEMENTARY AND SECONDARY EDUCATION ACT OF 1965, PUBLIC LAW 89-10	153

Chapter	Page
APPENDIX B. RAW SCORE DATA USED IN THE STUDY	157

LIST OF TABLES

Table	Page
1. 1974-75 Early Childhood Program Pupil Summary	94
2. 1975-76 Early Childhood Program Pupil Summary	96
3. t-Test for Change in Intelligence Test Scores Over a Three Year Period (Posttest Minus Pretest) (1973-74 Prekindergarten Group)	119
4. t-Test of Reading Achievement Scores for Experimental and Control Groups (1974-75 School Year)	121
5. t-Test of Mathematics Achievement Scores for Experimental and Control Groups (1974-75 School Year)	122
6. t-Test of Reading Readiness Scores for Experimental and Control Groups (1974-75 School Year)	123
7. t-Test of Differences Between Matched Pairs (Experimental Minus Control) on Reading Readiness Scores After One Year of Kindergarten (1974-75 School Year)	124
8. Analysis of Variance of Intelligence Test Scores for Two Experimental Groups and One Control Group (1975-76 School Year)	125
9. Analysis of Variance of Scores in Visual Motor Skills for Two Experimental Groups and One Control Group (1975-76 School Year)	127
10. Analysis of Variance of Scores in Language Usage for Two Experimental Groups and One Control Group (1975-76 School Year)	128
11. t-Test of Differences Between Matched Pairs (School-Based minus Home-Based) on Concept Formation Scores (1975-76 School Year).	130
12. Raw Scores from the Slosson Intelligence Test for the 1973-74 Early Childhood Program	158

Table

Page

13.	Reading Raw Scores on the Comprehensive Test of Basic Skills for the 1974-75 Early Childhood Program	159
14.	Mathematics Raw Scores From the Comprehensive Test of Basic Skills for the 1974-75 Early Childhood Program	160
15.	Raw Scores From the Metropolitan Readiness Test for the 1974-75 Early Childhood Program	161
16.	Raw Scores from the Slosson Intelligence Test for the 1975-76 Early Childhood Program	162
17.	Raw Scores From the Developmental Test of Visual Motor Integration for the 1975-76 Early Childhood Program	163
18.	Raw Scores From the Illinois Test of Psycholinguistic Abilities: Grammatical Closure Subtest for the 1975-76 Early Childhood Program	164
19.	Raw Scores From the Boehm Test of Basic Concepts for the 1975-76 Early Childhood Program	165

Chapter 1

BACKGROUND AND RATIONALE

Recent concentration of investigation and study by psychologists, educators, pediatricians, psychiatrists, anthropologists, nutritionists, and others have clearly pointed out that the child's earliest years are the time of most rapid physical and mental growth. At no other period in a child's life is he so susceptible and responsive to environmental influence which may affect his intelligence, his motivation and ability to learn, his concept of himself, his relationships with others, and his later health.¹ These factors are of utmost importance to all children. They may have even more serious consequences for children who are culturally deprived. The Head Start Program started in 1964 and the larger number of early childhood programs under the existing Elementary and Secondary Education Act of 1965 have forced recognition of the fact, known for some time but not widely accepted, that the children of the poor frequently arrive at school age seriously deficient in the

¹Ira J. Gordon (ed.), Early Childhood Education; The Seventy-First Yearbook of the National Society of Education, Part II (Chicago: The University of Chicago Press, 1972), p. 3.

ability to profit from formal education.¹

According to Butler, the Educational Policies Commission issued a statement in 1966 entitled, Universal Opportunity for Early Childhood Education, which stated:

advocating the availability of educational programs at public expense for all children beginning at the age of four. Such experience is viewed as supplementary to opportunities provided by the home. It is believed to be more needed by children called "disadvantaged", but recognition is given to the fact that early education is advisable for all children, not merely because of the need to offset disadvantages in their background, but also because they are ready by the age of four for a planned program fostering their development and because educators know ways to foster it through school programs.²

Early childhood education seems to be the most promising method of attacking educational deficiencies among the poor. Culturally deprived children usually lag from one to three years behind more advantaged children in the public school setting. One of the most widely quoted statements in favor of the development of early childhood education comes from Benjamin Bloom's summary of eleven hundred studies in which he concludes:

Put in terms of intelligence measured at age 17, from conception to age 4, the individual develops 50% of his mature intelligence, from ages 4 to 8

¹Annie L. Butler, Current Research in Education: A Compilation and Analysis for Program Planners (Washington, D.C.: National Education Association, 1970), p. 2.

²Butler, Current Research, pp. 8-9.

he develops another 30%, and from ages 8 to 17
he develops 20%.¹

The Federal Government especially has realized many of the ramifications of these findings in terms of current and potential social and economic problems.

In an attempt to salvage some of the human resources of the nation, the Federal Government, through the United States Office of Education, instituted the program of Title I of the Elementary and Secondary Education Act of 1965, Public Law 89-10.² This program gave financial assistance to public and private schools in order to meet the special educational needs of culturally deprived children. Some eleven years hence, this act is still in existence and appears to be the funding base for most prekindergarten programs for culturally deprived children.

RATIONALE FOR THE STUDY

Despite increased concern about early childhood education, it is difficult under present economic conditions for the public sector, local public boards of education, and indeed some educational leaders to accept the fact that priority status should be given to formal educational

¹Benjamin S. Bloom, Stability and Change in Human Characteristics (New York: John Wiley and Sons, 1964), p. 88.

²Hereafter referred to as E.S.E.A.

programs for all children before they reach the age of five and especially for culturally disadvantaged children. The current insufficient financial support for education all but makes it impossible for a local school district to fund a prekindergarten program except through other available sources, such as a federally funded project similar to the one discussed in this study.

There is substantial evidence which indicates that the total development of disadvantaged children is enhanced through early childhood education programs. One factor contributing to school failure for the educationally disadvantaged child in the upper elementary grades is the absence of appropriate cognitive development during the early years.¹ Emphasis on prevention through the implementation of early childhood education in basic skills can reduce the educational deficiencies of many students who have reached the "failure syndrome" psychological effect and/or the debilitating effect of a school experience weak in cognitive training programs.² The literature further points out the urgency for preventive programs for culturally deprived children based on the consensus that these children are

¹Alfred A. Lucco, "Cognitive Development After Age Five: A Future Factor in the Failure of Early Intervention with the Urban Child," American Journal Orthopsychiatric, XLII (October, 1972), 852.

²Lucco, p. 852.

behind in terms of performance when they start school and never catch up with their advantaged peers. Prekindergarten education for culturally deprived children is also necessary to compensate for deficiencies in the home and neighborhood environment. Frost concludes that certain facts suggest that conditions of environment, not organic causes, are probably responsible for most of the depressed intellectual functioning in our society and that one can do a great deal to improve the situation.¹

These arguments appear to demand specific attention to educational research and programming for disadvantaged children at the prekindergarten level. Through investigation of such programs already in operation some answers may be obtained concerning the value of early childhood programs. The Early Childhood Program of the study is relatively new and its benefits up to this point are unknown. Evaluation of early childhood programs could assist school personnel in modifying programs to benefit children.

Hence, the need to examine very closely organizational procedures, selection processes, program objectives, and evaluation procedures of an early childhood education program that has been in operation for the past three years. The researcher has served as a consultant and resource

¹Joe L. Frost, "At Risk!," Childhood Education, LII (May, 1975), 299.

person to the personnel of this program at various times during this period.

DEFINITION OF TERMS

The following terms used in the study are defined for clarity of reading:

Experimental school based group. This group of children were enrolled in the early childhood centers and received direct instruction for three hours on a daily basis. These children constituted the basic experimental group used in the study. Such a group was identified for each of the three years in the study and they met all eligibility requirements as prescribed by Title I, E.S.E.A. (see Appendix A).

Experimental home-based group. This group of children met the same eligibility criteria as those in the preceding experimental group but received one separate forty-five minute period of instruction per week in their own homes by a certified teacher. The parents also participated in this instructional period each week. This group was identified for the third year of the study only.

Control group. This group of children received no direct instruction and were not enrolled in any early childhood program. These children met the same eligibility

criteria as those children in the experimental groups and such a group was identified for each of the last two years in the study.

Reading readiness. Reading readiness is defined as that point in time when a child has acquired those experiences and skills which assure success in beginning reading.¹ To be successful in any beginning reading program, the pupil must possess the necessary concepts, vocabulary knowledge, and ability to handle the language relationship involved.² This definition is global in nature and does not limit reading readiness to the skills measured by the Metropolitan Readiness Test.

Language usage. Use of language is defined as verbal expression, auditory reception, auditory memory, auditory association, and syntax. These factors are defined as follows.

1. Verbal expression: The ability to put ideas into words.
2. Auditory Reception: The ability to understand the measuring of spoken words and other sounds in one's

¹Guy L. Bond and Miles A. Tinker, Reading Difficulties - Their Diagnosis and Correction (New York: Appleton-Century-Crofts, Inc., 1957), p. 24.

²Bond and Tinker, p. 24.

environment.

3. Auditory memory: The ability to remember what is heard long enough to repeat it immediately.
4. Auditory association: The ability to coordinate and compare information heard in a meaningful way.
5. Syntax: The ability to understand, use, and generalize the rules of language.

Visual motor skills. These skills include visual motor integration, visual perception, and pre-writing skills. These skills are defined as follows:

1. Visual motor integration: Eye-hand coordination, essential for a child to accomplish tasks.
2. Visual perception: The interpretation and understanding of pictures and visual symbols.
3. Pre-writing skills: The fundamental manipulation of puzzle-pieces, toys, tools, etc., which aid in manipulating writing tools.

Basic concept formation. Basic concept formation is an understanding of the fundamental ideas of language. These include color, shape, quantity, size, same and different, size seriation, sequence of events, ordinal relationships, spatial relationships, classification, comparatives, and opposites.

STATEMENT OF PROBLEM

Present research and theory support the conclusion that the child's early years are the time of most rapid physical and mental growth and that by age nine at least fifty percent of the general achievement pattern found at age eighteen has been developed.¹ Parnell comments that educators have known for a long time that values and basic habit patterns usually are acquired by the time a child is eight years old.² It is known that a child who fails or does not achieve at average levels in the early grades is likely to fall further behind in knowledge and skills, to lack desire for interest in learning, and to have feelings of inadequacy.³ Therefore, a need appears to exist to begin formal education at an earlier age than that of the kindergarten years.

The purpose of the study was to examine the effect of such a formal early childhood program on culturally deprived children. Retention of intellectual growth due to prekindergarten treatment was examined. Comparison of growth and status factors for children who received

¹Bloom, p. 105.

²Dale Parnell, "Upgrading the Downgrader," Compact (July/August, 1973), 22-24.

³Parnell, pp. 22-24.

prekindergarten treatment with children who had not received such treatment was also examined. The specific aspects of reading readiness, reading and mathematics achievement, measured intelligence, visual motor skills, language usage, and concept formation among these groups of children were investigated.

HYPOTHESES OF THE STUDY

Based on the preceding problem statement, the following null hypotheses were tested.

1973-74 Early Childhood Program. At the end of one year of participation in the Early Childhood Program and two years in the school district:

1. There will be no change in measured intelligence of culturally deprived prekindergarten children between the time of beginning one year's participation in an Early Childhood Program and at the end of grade one.

1974-75 Early Childhood Program. At the end of one year of participation in the Early Childhood Program and one year in the school district:

1. There will be no differences in reading achievement change following one year of kindergarten between culturally deprived children who participated for one year in an Early Childhood Program and

culturally deprived children who were not participants in such a program.

2. There will be no differences in mathematics achievement change following one year of kindergarten between culturally deprived children who participated for one year in an Early Childhood Program and culturally deprived children who were not participants in such a program.
3. There will be no difference in reading readiness status following one year of kindergarten between culturally deprived children who participated for one year in an Early Childhood Program and culturally deprived children who were not participants in such a program.

1975-76 Early Childhood Program. At the end of one year of participation in the Early Childhood Program:

1. There will be no differences in measured intelligence scores among culturally deprived children who participated for one year in a school-based program, culturally deprived children who participated for one year in a home-based program, and culturally deprived children who had not participated in either program.
2. There will be no differences in measured scores of visual motor skills among culturally deprived

children who participated for one year in a school-based program, culturally deprived children who participated for one year in a home-based program, and culturally deprived children who had not participated in either program.

3. There will be no differences in measured scores in use of language among culturally deprived children who participated for one year in a school-based program, culturally deprived children who participated for one year in a home-based program, and culturally deprived children who had not participated in either program.
4. There will be no difference in measured scores of concept formation among culturally deprived children who participated for one year in a school-based program and culturally deprived children who participated for one year in a home-based program.

DESIGN OF THE INVESTIGATION

Permission was obtained from a school district to conduct the study. The population of the study consisted of culturally deprived children living in a city of 110,000 people. The five elementary public schools identified for the purposes of this study met the requirements of eligibility as specified by Title I, E.S.E.A. Three of these

schools were selected as centers for the experimental school-based groups. Children residing in these attendance center areas meeting cultural deprivation criteria were eligible for participation in this group. The other two schools were selected as centers for the control groups. A child had to meet cultural deprivation criteria as well as live in one of these two attendance center areas to be eligible for the control group. The experimental home-start group from the school year 1975-76 was made up of children meeting these same eligibility requirements.

In order to be eligible as a participant, a child had to meet the following criteria for each of the years designated in the study.

1. Live in a Title I attendance area as specified by E.S.E.A.
2. Be four years of age by September 15.
3. Score at or below the fortieth percentile on one of the following:
 - A. The Developmental Test of Visual Motor Integration
 - B. The Slosson Intelligence Test for Children and Adults
 - C. The Grammatic Closure subtest of the Illinois Test of Psycholinguistic Abilities

Data for the study were collected on children participating in the Early Childhood Program and based on scores

from the following tests:

1. Slosson Intelligence Test for Children and Adults
2. Developmental Test of Visual Motor Integration
3. Illinois Test of Psycholinguistic Abilities:
Grammatical Closure Subtest
4. Boehm Test of Basic Concepts
5. Comprehensive Test of Basic Skills
6. Metropolitan Readiness Test

Three different groups of children were identified. These groups consisted of an experimental school-based group, an experimental home-based group, and a control group.

1973-74 Early Childhood Program. The IQ scores from an experimental school-based group of the Early Childhood Program were taken at the beginning of the 1973-74 school year and were compared with the IQ scores of these same children after they had completed grade one. A sample of children were randomly selected from the original group to be tested at the end of grade one. A t-test for correlated groups was used in analyzing the data from the two sets of IQ scores for this sample of children.

1974-75 Early Childhood Program. Three hypotheses were investigated concerning an experimental school-based group and a control group in the 1974-75 Early Childhood Program. A sample of children approximately equal in number

to that of the existing control group was randomly selected as the experimental school-based group for this study. The mean and standard deviation of scores from these two groups were used to determine if there were any differences in growth and status.

The first two hypotheses for this school year dealt with basic skill achievement in reading and mathematics. Growth was determined by differences in raw scores from tests given at the beginning and at the end of the kindergarten year. To check these hypotheses a t-test for the difference between mean change scores of independent samples was used. This t-test analyzed the effect of treatment on reading and mathematics by comparing the change scores of these two groups.

A third stated hypothesis for this school year concerned the status of the two groups in reading readiness. Such status was determined by using raw scores on a readiness test given at the end of the kindergarten year. To check this stated hypothesis a t-test for a difference between means of independent samples was used. This hypothesis was also checked by analyzing the within-ability-level status on reading readiness. Ability level was determined by comparing readiness scores between the two groups while equating out the measured IQ. A t-test for correlated groups was used in analyzing the data from the two sets of readiness scores for this sample of children.

1975-76 Early Childhood Program. Three hypotheses were investigated concerning an experimental school-based group, an experimental home-based group, and a control group in the 1975-76 Early Childhood Program. Testing for each of the three hypotheses included a pretest given at the start of the prekindergarten year and a posttest given upon completion of the prekindergarten year.

Means and standard deviations were used to equate as closely as possible the three groups by using pretest scores in each of the three comparison areas. A discard process was used to form the final comparison groups. The areas of comparison were as follows:

1. Measured intelligence based on IQ scores.
2. Visual motor skills based on age equivalent scores.
3. Language usage based on raw scores.

Since three groups were involved in the testing of these hypotheses, a one-factor analysis of variance was used in each case. The Scheffe' Test for pair comparisons was used whenever significance was found in the analysis of variance test in any of these situations.

A fourth hypothesis for this school year was investigated concerning the experimental school-based group and the experimental home-based group. The area of comparison was concept formation. By utilizing raw scores from the pretest, subjects were selected and matched pairs assigned in order to equate the two groups. A t-test for the mean

difference in correlated samples was then applied to the posttest scores to check the stated hypothesis.

Level of significance. The .05 level was used with each of the inferential tests to determine if significance did occur.

ASSUMPTIONS AND SCOPE OF THE STUDY

Scope of the study. The study presents an analysis of the effect of an early childhood program designed to alleviate developmental lags of culturally deprived children. The study was divided into three separate school years, with each year having a separate group of children. The first year included an experimental school-based group whereas the second year included both an experimental school-based group and a control group. The last year of the study included an experimental school-based group, an experimental home-based group, and a control group. This was an attempt to determine if significant differences in growth and status occurred due to the prekindergarten treatment effect.

Assumptions. For purposes of the study:

1. It is assumed that growth in the areas of intelligence, reading and mathematics achievement, reading readiness, visual motor integration, language usage, and concept formation can be measured and defined.

2. It is assumed that each of the three Early Childhood Centers involving the experimental school-based portion of the study are all similar according to the following:
 - A. Children are of the same cultural background and general ability as identified by the eligibility requirements.
 - B. The instructional methodology is the same.
3. It is assumed that all children involved in the study are of the same cultural background even though they reside in the five school attendance areas meeting eligibility requirements and meet all educational deprivation requirements.

DELIMITATIONS

The limiting factors in the study may be summarized as follows:

1. The study is limited to culturally deprived children meeting the eligibility requirements as given in the study and is not representative of early childhood programs in general.
2. The study is concerned only with the Early Childhood Program for the years 1974 through 1976 in a mid-western city of approximately 110,000 population.
3. Due to the nature of the study, it was not feasible to control instruction beyond a prescribed program

of language development, personal-social development, and development of gross and fine motor skills.

4. Due to the fact that the study is concerned with human subjects, it was impossible to control all the existing variables.

ORGANIZATION OF THE STUDY

Chapter 1 presents the problem to be studied, the rationale for the study, the theoretical base of the study, the definition of terms as used in the study, the statement of the problem, and the delimitations of the study.

Chapter 2 reviews the literature concerning the topic of the study.

Chapter 3 describes the design of the study, the population, the selection of the sample, and the testing instruments. It will also describe the programs of training and the statistical methods used in treatment of the data collected to test the hypotheses of the study.

Chapter 4 contains a statistical analysis of the data and indicates the degree to which the hypotheses are found to be supported within recognized limitations.

Chapter 5 presents a discussion of the results of the study, and recommendations regarding future studies in this area.

Chapter 2

REVIEW OF THE LITERATURE

INTRODUCTION

A summary of the related literature and research findings will be presented around the following topics:

1. Early childhood education defined.
2. Theoretical and historical constructs related to early childhood education.
3. Effectiveness of early childhood education.
4. Related research in early childhood education.

EARLY CHILDHOOD EDUCATION DEFINED

In the literature there exists a lack of consistency in the use of the term early childhood education. The terminology is in transition; in many instances the terms of early education, early schooling, early stimulation, early childhood, early intervention, preschool, prekindergarten, preprimary, nursery school, and day care are used synonymously. However, many of these terms have separate and distinct meanings. "Early childhood education" appears to be the most frequently used term in the literature.

Butler supports this opinion as she states:

For example, many of us find it unacceptable to call early childhood education either "early stimulation" or "early schooling". Unfortunately the term "early stimulation" found its way into the literature

in connection with the push to combat cultural deprivation and as applied largely to a type of sensory stimulation believed by some to assist the learning of infants and children of lower socioeconomic levels.

I find even more objectionable the term "early schooling." It implies an overemphasis on teaching of academic skills, combined with the idea that providing programs for children as young as four years will orient¹ the children toward academic skill acquisition.

The term "early intervention" also is used extensively in the literature and usually refers to an educational program for four-year-old children.²

There seems to be general agreement among educators that the generic term "early childhood education" refers to children from three to eight years of age.³ According to Weber, educators in the field have considered the years from three to eight as developmentally and psychologically one-- thus encompassing the years for nursery school, kindergarten, and the primary grades.⁴ The traditional term "nursery

¹Annie L. Butler, "Early Childhood Education: A Perspective on Basics," Childhood Education, L (October, 1973), 22.

²Ellis D. Evans, Contemporary Influences in Early Childhood Education (New York: Holt, Rinehart and Winston, 1975), p. 2.

³David Elkind and Nancy Lyke, "Early Education and Kindergarten: Competition or Cooperation?" Young Children, XXX (September, 1975), 393.

⁴Evelyn Weber, Early Childhood Education: Perspectives on Change (Worthington, Ohio: Charles A. Jones Publishing Company, 1970), p. 2.

school" is being discarded by educators because it implies supervision by nurses, an emphasis on physical development, and a negative association with nursing homes for the aged. Educators do not favor the term "day care" either, because of its custodial connotation.¹

Moore and Moore suggest that the term early childhood education is too often equated with out-of-home teaching or care.

On the basis of a recent research review we conclude that perhaps it should include birth through age seven. We see early childhood education programs as including but not limited to early schooling and to day care. We believe that all children should be provided training or education from birth, but that it should be far more affectively than cognitively oriented, and wherever possible should be in the hands of the parents until age seven or eight.²

Shane states that "when properly conceived, early childhood education is appreciably more than a mere downward extension of current elementary school programs."³ In this definition, early childhood education is a significant source of input, of important learning experiences,

¹Lloyd M. Dunn and others, Peabody Early Experience Kit, Part I (Circle Pines, Minnesota: American Guidance Service, 1976), p. 7.

²Raymond S. Moore and Dennis R. Moore, "How Early Should They go to School," Childhood Education, L (October, 1973), 14.

³Harold G. Shane, "The 'Domino Effect' of Early Childhood Education on the Elementary School," National Elementary Principal, LI (September, 1971), 31.

which soon will begin to feed a new type of client into the primary years.

The field of early childhood education includes a wide range of activities concerned with the care and development of children. These activities have become organized into distinctive programs requiring special knowledge, skills, and procedures, for successful operation. McLure and Pence report that current programs usually are defined as one of six types:

(1) parent education for mothers of infants, commonly defined as ages from birth to three, and of children at older ages; (2) research and experimental programs to study development of children of all ages, infants as well as older; (3) nursery school (prekindergarten) for children of ages three and four; (4) kindergarten for five-year-olds; (5) day care programs for children of working mothers, or for others in circumstances of need; and (6) special education for children with exceptional difficulties. In addition, there are various programs for health, social service, and general information to parents on child care.¹

It is important to stress that early childhood education, as found in the literature, is quite diverse. Programs for the education of children ages three through eight vary in the kinds of curriculum offered, in the nature of their sponsorship, in the length of time children are in the

¹William P. McLure and Audra May Pence, Early Childhood and Basic Elementary and Secondary Education, National Educational Finance Project--Special Study No. 1 (Champaign, Illinois: Bureau of Educational Research, College of Education, University of Illinois, 1970), p. 11.

program and in the staffing requirements--to mention but a few of the more significant differences. Frequently a danger is reflected in later learning disabilities and attitudes toward school that can arise from the absence of an adequate early childhood education experience. Butler defines what she believes to be basic essentials for a quality early childhood education program.

What then are some basics for quality early childhood education programs? Minimum essentials are a safe and carefully planned and equipped physical environment in which the child spends part of his day, intellectual stimulation, opportunities to develop a healthy personality and acquire social proficiency under the guidance of a competent staff. Omitting any of these elements or using unacceptable procedures in trying to accomplish them affords reason to reject the program.¹

In the past there has been a great deal of difference between the purpose of a day care program and that of an early childhood program. According to Feeney, day care centers have been places where working parents have left children to receive custodial care while the parents were at work.² There is, however, another approach called "developmental day care" in which educators have begun to show interest. Developmental day care provides physical care, a good educational program, diagnostic services,

¹Butler, Early Childhood Education, p. 22.

²Stephanie Feeney, "Child-Care Debate: Key Questions," Compact (July/August, 1973), 25.

medical and social services, and a nutrition program.¹ Such a program appears, at least on the surface, to be similar to Head Start programs. Educators especially interested in the early intervention movement of the past decade have become sensitized to the inadequacies of day care and to the relationship of early childhood education to day care.²

Summary. Early childhood education is a term used by most educators to describe programs of formal educational instruction for children between the ages of three and eight. The term "prekindergarten education" has been adopted by most educators as one type of early childhood education program which encompasses the traditional nursery school education and day care for children two and one-half to four years of age. This study is concerned with an early childhood program for four-year-old children.

THEORETICAL AND HISTORICAL CONSTRUCTS OF EARLY CHILDHOOD EDUCATION

Philosophical Basis for Early Childhood Education

Contemporary early childhood education extends to European thinkers such as Comenius, Rousseau, and Pestalozzi, all of whom championed the rights of children. Out of the study of Frederick Froebel came one of the

¹Feeney, p. 25.

²Evans, p. 19.

earliest recognized approaches to the education of young children. Having derived his educational principles from the observation of children, Froebel formulated his philosophy. According to Evans, "Froebel's child-centered orientation has persisted among his successors and provides, at least in theory, the backbone of modern early childhood education practices."¹

John Dewey gathered support around the turn of the twentieth century for his philosophical orientation toward early childhood programs. Dewey emphasized the importance of social interaction as it contributed to democratic living. Patty Smith Hill and Alice Temple were ardent followers of Dewey and their approach provided a departure from the philosophy of Froebel. While Froebel had believed in the child's "natural tendency" to play, his program in America had become heavily teacher-directed. The Dewey philosophy allowed the child participation in a work-play period in which social interaction was free and natural and less teacher oriented.² This free social interaction has remained a part of the early childhood education curricula today.

During the first quarter of this century, early childhood education slowly took a new form of development

¹Evans, p. 43.

²Weber, pp. 8-9.

under American scholars such as Kilpatrick, Thorndike, Dewey, and Hill.¹ Jean Piaget, a European contemporary, has probably had the greatest impact of any individual on early childhood education during the past two decades. His ideas have provided intellectual stimulation to recent developments in this country.²

It appears that certain persistent themes have pervaded the mainstream of American early childhood education. According to Evans, these take the form of dominant philosophical and pedagogical thematic commitments among the majority of early childhood educators.³ The first thematic commitment, the ethic of social reform, refers to an expectation among educators that early childhood education will affect positively both the general quality of American child-rearing practices and children's long-range social mobility by providing a foundation for subsequent school success.

The second thematic commitment has been the freedom for children to learn. This ideal refers to the hope that elementary school practices which allegedly are

¹ McLure and Pence, p. 12.

² David Elkind, "Early Childhood Education: A Piagetian Perspective," National Elementary Principal, LI (September, 1971), 49.

³ Evans, p. 42.

depersonalizing and authoritarian will be abandoned in favor of those championed by child welfare advocates.

Related to the concept of freedom to learn is the third influence in early education: a belief in childhood as a unique, precious, and critical period for affective development. As a consequence of this belief, many programs have been dominated by free play and attention to aesthetics. The third thematic commitment has generated a conflict between those who would agree with the need for free play and those who see the role of the early childhood education program as primarily to inculcate culturally valued academic skills.¹

The philosophical base which relies heavily on the young child as a unique individual in that the child must become a "self-actualizing" or "fully-functioning" person is not without controversy in today's contemporary early education programs.² Many of these programs maintain a traditional child-centered and informal approach to classroom organization. As a result the prekindergarten "graduate" moves into kindergarten classrooms as an autonomous individual who is accustomed to self-selected learning experiences. He enters a kindergarten classroom where a teacher in many instances has a prescribed program of instruction. Children from early childhood education programs who display

¹Evans, p. 43.

²Weber, pp. 9-11.

independence may complicate the teacher's task by creating a source of tension or friction.

Philosophical Conflicts in Early Childhood Education

Early childhood education has developed rapidly in terms of implementation of program and numbers of children served. As a result of such a rapid growth, philosophical conflicts in purposes and goals are evidenced in today's programs. It appears difficult to interpret the numerous research studies on early childhood education in the United States without first referring to the conflicting ideologies and to the rapid changes that characterize the field.

Branche highlights the government sponsored War on Poverty with its emphasis on the young child in Project Head Start (1965), the Parent Child Centers (1966), and Project Follow Through (1967). All of these gave early childhood education a fast, mushrooming beginning and are partially responsible for the present conflict in program goals and methods. According to Branche, large quantities of federal funds allocated for such programs over a short period of time have resulted in major philosophical differences among early childhood educators.

The lines are drawn along the cognitive-affective domain or the nature-nurture syndrome, between the open classroom, integrated day, programmed instruction, or a variety of other labels, indicating a

dichotomy in the approaches¹ that are termed "appropriate" for children.

Butler also cites conflicts in philosophy arising out of the increased interest in early childhood education since 1965.

Very briefly, much of the conflict revolves around such issues as the relative importance of direct instruction and incidental learning, the emphasis on cognitive learning as opposed to a more broadly based curriculum, and the emphasis on education for the future versus education more presently oriented.²

The relative importance of play in the programming of early childhood education has contributed to the conflict. In some programs self-initiated play is viewed as the major vehicle for learning, while in others play is an adult-prescribed, adult-initiated activity. In the adult-prescribed programs spontaneous play often is limited to a short period of outdoor activity.³ As previously mentioned, Butler's theory of the "play concept" follows closely the basic philosophical differences between Dewey and Froebel.

Margolin has pointed out that conflicting ideologies

¹Christine F. Branche, "Children Fit No Model: Program Considerations for Early Childhood Education in Urban Areas," National Elementary Principal, LI (September, 1971), 110.

²Annie L. Butler, "Areas of Recent Research in Early Childhood Education," Childhood Education, XLVIII (December, 1971), 143.

³Evans, p. 59.

may not be apparent during the planning or initial implementation, but conflicts do appear when educators put the program into action. She identifies five issues that ultimately must be faced if children are truly to benefit from the money, research, and time spent to strengthen early childhood education:

First, an erroneous impression that a division exists between intellectual (or cognitive) pursuits and exploratory play behavior, that one has "mind-making" properties and the other does not because the latter is less systematically presented; second, the noticeable neglect of subsidized grants toward the study of aesthetic development in young children because it is difficult to measure gains in self-expression; third, a narrow interpretation of what childhood is, as a psychosocial entity; fourth, that the nursery school teacher is not consulted often enough for the insight she can provide in the definition of research problems (the researcher can put her observations into a scientific framework); fifth, that a compendium or set of guidelines is needed urgently as a representative work which synthesizes divergent views of major people in early childhood education. An assessment and statements refuting or justifying certain positions are needed to inform those in and outside the early childhood education field on the nature of its contemporary growth and development.¹

The literature points to these philosophical issues as unresolved. Butler has summarized these issues in detail which she says exist in at least three distinct areas--methods used, scope of the program, and orientation

¹Edythe Margolin, "Crucial Issues in Contemporary Early Childhood Education," Childhood Education, XLV (May, 1969), 504.

of the program.¹

Methods of instruction. The methods of instruction in this categorization vary from almost total direct instruction to a strong reliance on incidental learning. Advocates of directed instruction believe that the best approach to teaching young children is to identify specifically those learnings that are needed by children and to teach those skills directly. The curriculum is relatively fixed and the program is structured to permit specific instruction. The child must conform to the teacher-directed activity with the assumption that he will then assimilate the desired learning.

Play in this highly structured approach to instruction is usually adult prescribed, adult initiated, and directed by the nature of the equipment. Spontaneous play is limited to a short period, usually outdoors and during a recess time.²

At the opposite extreme of directed instruction is an open plan of operation. Children are given a high degree of choice in the educational activities in which they engage and they have freedom to move to a more interesting activity when tired or finished with a previous choice. The teacher

¹Annie L. Butler, Current Research in Education: A Compilation and Analysis for Program Planners (Washington, D.C.: National Education Association, 1970), p. 12.

²Ibid., p. 13.

functions in a guiding rather than a directing role and the teaching goals are not as clearly observable.¹

In practice, few programs represent either extreme. Programs that emphasize direct instruction usually give the children some time to play. Programs that are highly individualized allow some small group and class activities that are closely related to the interests of the children. Much of the difference arises in the degree to which the teacher is able to implement these programs effectively.²

Scope of the program. The emphasis of some programs is almost entirely on cognitive learning while others are based on broader goals including all areas of child development. Programs specifically oriented toward cognitive development emphasize the teaching of specific cognitive skills such as recognition of letters, words, numbers, and shapes.³

At the other extreme are programs which emphasize the development of skills in every aspect of the child's growth. Specific goals are stated which relate to the aspects of the child's social, emotional, physical, and intellectual development. Affective skills are regarded with as much significance as the cognitive skills, which in this view

¹Butler, Current Research, p. 13.

²Ibid., p. 15.

³Ibid., p. 16.

are less clearly defined.¹

According to Elkind and Lyke, the relative importance of these two features in contemporary early education programs are producing philosophical conflicts. Essentially, part of the controversy revolves around the role of affective instruction in education. One point of view says that feelings will take care of themselves, while the other says that feelings are a part of the learning situation. The literature implies that most early education programs today are much more involved in cognitive training than they were a decade ago, thus producing further philosophical conflict. There is more emphasis upon concept training and beginning reading and mathematics experiences. In this sense, early childhood education has incorporated many of the learning activities typically associated with kindergarten programs. This overlapping of instructional programs is a source of friction between early childhood education and kindergarten programs.²

William Fowler, a noted psychologist in the area of early childhood education, is responsible for conducting research in cognitive enrichment. His analytical reviews of the gaps of understanding of early cognitive learning have

¹Butler, Current Research, p. 16.

²Elkind and Lyke, p. 396.

led to several important conclusions. After reviewing much research, including his own infant development programs, Fowler concludes that:

On a broad plane our findings generally support the notion of the equal, indeed essential, value of both symbolic, guided cognitive orientations and self-propelled free play and flexible approaches toward early child-care and education. The implications of our research to date suggest that, far from being uneconomic, integrated cognitive-interpersonal approaches to child rearing foster the development of competence, autonomy, and personality development in children from many social backgrounds.¹

This conclusion represented a balance of viewpoints that were too often phrased in negative terms: free play versus structured academic learning; child-centered learning by self-selection and self-pacing versus a tightly structured authoritarian, and didactic approach.

Orientation of the program. Some programs give significance to preparation for the future while others are more oriented toward meeting present needs. The point of view attached to the emphasis on culturally deprived children has called for a preparation period to ready these children for later school experiences. The child must adjust to a curriculum which is relatively fixed. If the child fails to adjust to the fixed curriculum, he is usually retained. This

¹William Fowler, "On the Value of Both Play and Structure in Early Education," Young Children, XXVII (October, 1971), 35.

curricular design can accommodate only a limited range of individual differences.¹

According to Weber the compensatory programs involving culturally deprived children view the early years as a time for promoting cognitive growth in order that children may later function more adequately within the school system. Such programs tend to ignore certain ordinates of early childhood and run a great risk of providing experiences which have little relevancy for the young child.²

Accepting children as they are forms the basis of the opposing view. It is believed that there are worthwhile skills that all children can acquire. The teacher's responsibility is to be aware of the wide range of learning opportunities available to children. The teacher can use the child's enthusiasm and feeling of accomplishment as motivating factors to enhance future achievement. This point of view appears to take into consideration the individuality of the learner.³

The Growth of Early Childhood Education

Until approximately 1965, early childhood education in the United States developed slowly. A primary agent in

¹Butler, Current Research, p. 17.

²Weber, p. 95.

³Butler, Current Research, p. 18.

the formalization of kindergarten was Susan Blow, whose early educational experiments at this level took place in St. Louis, Missouri, in 1873. In 1874, the National Education Association formally recognized kindergarten as a part of the total educational process. This move was followed by a significant recommendation from the Association that kindergarten education be included as a regular part of the public school program.¹

Prekindergarten education in this country has a much more recent history than does kindergarten. Public nursery schools were first introduced in the United States from England in the early 1920's in the form of laboratory schools on college campuses.² As a result of federal funding during the 1930's, nursery schools began to be established to provide work for unemployed teachers. Further federal subsidization for nursery school education was given during World War II through the Lanham Act.³ By the mid-1960's close to seven hundred thousand children were enrolled officially in public and private nurseries. By 1971, pre-kindergarten enrollment had reached over a million children. The total combined growth of public and private schools in

¹Evans, p. 43.

²Ibid., p. 52.

³Barbara J. Harned, "The Federal Government and Pre-school Education," National Elementary Principal, LI (September, 1971), 93.

this country serving prekindergarten children appears to have been approximately as follows:¹

Year	Facilities
1930	500
1942	3,000
1951	3,600
1960	7,000
1965	475,000
1973	over 600,000

It was estimated that there were about 3,250,000 three-year-old children in the U.S.A. in 1975. Only about 5 percent of these children were in public or private schools, day care centers, or nurseries. About one-third had working mothers and over 50 percent of these children were from disadvantaged minority groups.²

Overview of Current Developments

Persons interested in early childhood education today will find a number of readily identifiable trends which have occurred since 1965. Class size has decreased and there is a tendency to accommodate multiple age levels within the same classroom. For example, class size may be limited to around fifteen three- and four-year-old children. The expanded use of teacher aides has changed the adult-child ratio. Frequently, there may be found as many as three adults in a classroom of fifteen children. There is a trend to reduce the number of hours children attend school

¹Dunn, p. 42.

²Ibid.

by increasing instruction in the home. This allows more planning time for staff in order to consider the kinds of experiences that should be provided for children. These and other trends have been stimulated by the increased interest in early childhood education in the United States since the initiation of federally funded compensatory education programs for culturally deprived children. There is general agreement that such government-sponsored programs as Project Head Start and E.S.E.A., both initiated by the United States Congress in 1965, gave the impetus for today's rediscovery of the educational programs of the young child.

Compensatory education. According to Evans, the intervention movement in early childhood education and compensatory education are virtually synonymous. He defines compensatory education as that which "compensates" for real or perceived inadequacies in the total environment of children.¹ These children were almost exclusively from poor families and were frequently from racial and/or ethnic minorities.

The impetus for many current prekindergarten programs stems from the compensatory concept, which also includes the desire to provide experiences in early childhood in order to ensure success in later educational experiences.

¹Evans, p. 6.

Efforts are made to develop a curriculum that will compensate for the deprivations of earlier years. Prior to 1965, prekindergarten education was largely the province of affluent children. Subsequently, it became an attempt to provide better opportunities for great numbers of culturally deprived children.

The fundamental premise of compensatory education is that certain cognitive and motivational deficits characterize most culturally deprived children, predisposing them to early and cumulative school failure. According to the "cumulative deficit" hypothesis, experiential deficiencies induce growth deficits that interfere progressively with subsequent growth processes, learning, and motivational development.¹ Hence, a psychological rationale was molded. This came about during an opportune time when political conditions would allow for the approval of programs which improved educational services for the poor and oppressed. Compensatory education was, and continues to be, an attempt to help alleviate these deficits.

Compensatory education programs have been criticized for their reinforcement of ethnocentrism and the belief that children with a different ethnic, racial, or cultural language have less intellectual ability. A number of programs have also been criticized because their diagnostic

¹Evans, p. 6.

and prescriptive procedures were biased toward groups or class deficits. Still others have criticized such programs for overemphasizing the cognitive area.¹ However, there is now a much greater sensitivity among educational leaders to these problems and the needs of children from all minority group settings.

Culturally deprived children. A variety of research approaches suggest culturally deprived children share a similar pattern of characteristics and profile of deficits. According to Meichenbaum and Turk, descriptive and empirical studies have indicated the following weaknesses among culturally deprived children:

- (1) language deficiency; (2) perceptual inadequacy, especially with reference to auditory and visual discrimination; (3) difficulty in making the transition from concrete to abstract reasoning; i.e., from more concrete to conceptual; (4) slowness and inflexibility in cognitive functioning; (5) intellectual deficiencies in both competence and style already well established in the pre-kindergarten years; and (6) significantly lower IQ in the preschooler, tending to remain stable thereafter.²

Evans would add to this list of deficiencies attentional

¹Evans, pp. 7-8.

²Donald H. Meichenbaum and Lorraine Turk, "Implications of Research on Disadvantaged Children and Cognitive-Training Programs for Educational Television: Ways of Improving 'Sesame Street'," Journal of Special Education, VI (Spring, 1972), 28.

responses and selected social-emotional behaviors.¹

Meichenbaum and Turk also reported that one of the important differences between middle-class children and culturally disadvantaged children was not in the ability of either group to name things but rather in the middle-class child's tendency to do so spontaneously. However, when disadvantaged children were instructed to verbalize in relevant ways (e.g., naming stimuli), their learning rate was often markedly facilitated.² Blank and Solomon reported a similar finding. They found that many deprived children used language to direct their problem solving only when asked; they would not use language spontaneously without external prompting. Thus, it was not the absence of words that handicapped the culturally deprived child but rather his reluctance to use them without specific demands.³

Baratz and Baratz hypothesized that disadvantaged children had structurally coherent linguistic and cognitive systems that were merely different from those of middle-class

¹Evans, p. 65.

²Meichenbaum and Turk, p. 29.

³Marion Blank and Francis Solomon, "A Tutorial Program to Develop Abstract Thinking in Socially Disadvantaged Preschool Children," Child Development, IXL (June, 1968), 381.

children but in no way defective.¹ Houston indicated that "the situational specificity of language deficit further underscored the suggestion that the disadvantaged child manifested a production deficiency."² This was interpreted to mean that the culturally deprived child did not use spontaneously the mediators and linguistic habits within his repertoire unless explicitly instructed to do so.

Meichenbaum and Turk suggested that:

possibly as a result of his cognitive weaknesses, the disadvantaged child often manifests motivational and attitudinal differences from more socially advanced children--differences which often are detrimental to successful experiences in school. The culturally deprived child tends to seek immediate rather than delayed gratification; his main concern is for the "here and now"³ with little consideration for future endeavors.

These children show higher levels of performance for concrete rewards than for the more abstract reinforcement of social praise. The opposite is evident for children of the middle class. Disadvantaged children often have a poor self image and low self esteem. In addition, the life style of the deprived child generates a demand for externally oriented

¹Stephen S. Baratz and Joan C. Baratz, "Early Childhood Intervention: The Social Science Base of Institutional Racism," Harvard Educational Review, XL (February, 1970), p. 35.

²Susan H. Houston, "A Reexamination of Some Assumptions About the Language of the Disadvantaged Child," Child Development, XLI (December, 1970), 959-960.

³Meichenbaum and Turk, p. 32.

motivation; consequently, he is less prepared for the school's system of reward and punishment.¹

Few studies have noted the strengths and positive aspects of the culturally deprived child. Meichenbaum and Turk reported that individuals from deprived circumstances were not deficient in experiences but rather possessed somewhat different understandings and abilities because of their life condition. Their strengths were in practical knowledge, more experiences with life, strong in-group feelings, self-reliance, and autonomy. They maintained that research efforts with deprived children should shift from an emphasis on deficits to an exploitation of strengths.²

The influence of the federal government. The confusion which exists in regard to early childhood education is evident in the literature. Several writers have attributed the source of this confusion to federal programs.³ As a result of the large appropriations of federal funds allocated for programs, experts in early childhood education have appeared overnight. These funds have also been used for the development of program models, demonstration project/schools, professional conferences, and the writing of professional books and magazine articles.

¹Meichenbaum and Turk, p. 32.

²Ibid.

³Branche, p. 110.

There appears to be some truth to the claim that the federal government has caused the confusion. However, these critics seem to forget that federally sponsored programs for prekindergarten children were an outgrowth of great national concern at the time of their inception. Project Head Start of the Economic Opportunity Act of 1964 and Title I, E.S.E.A. of 1965 followed by the Parent Child Centers in 1966 and Project Follow Through in 1967 gave early childhood education the public spotlight. Federal funds played an important role in focusing attention on the significance of early childhood development in this country.

Although federal funds are recognized as being the major impetus for the recent expansion of early childhood programs, they have been somewhat narrow in scope. Federal programs have been aimed primarily at assisting young children in special circumstances who might otherwise be expected to face future educational problems. Much of the concern was focused on children with personal difficulties arising from impoverished home environments. An attempt is being made by these programs to alleviate harmful economic and environmental effects on culturally deprived prekindergarten children.

Project Head Start was designed as a comprehensive program addressing itself to the needs of young children and their families. According to Klein, a total impact approach for prekindergarteners was needed and he reported

the following objectives:

(1) meeting physical, nutritional, and dental needs; (2) strengthening emotional and social development by encouraging self-confidence, spontaneity, curiosity, and self-discipline; (3) stimulating mental processes and skills with particular attention to conceptual and verbal aspects; (4) establishing and reinforcing patterns and expectations of success to promote self-confidence; (5) increasing the child's capacity to relate positively to family and community, while at the same time strengthening the family's capacity to contribute to the child's development; and (6) fostering in the child and his family a responsible attitude toward society, while stimulating constructive opportunities for the poor to work together on a personal and community basis toward the solution of their problems.¹

The overall goal of Head Start was to strengthen the sense of dignity and self-worth within the child and his family. The prevailing philosophy was that every child deserved an education which was conducive to growth and development, and a family that was being helped to achieve a higher degree of social effectiveness.

In 1965, a pilot Head Start project enrolling 561,000 children was initiated with a federal appropriation of \$96.4 million. By 1970, it had grown to include more than 3,804,000 children from low-income families. According to Klein, this investment of public funds "has successfully and dramatically contributed to the professionalization of early childhood programs and their acceptance into the total

¹Jenny W. Klein, "Head Start: National Focus on Young Children," National Elementary Principal, LI (September, 1971), 99.

educational system."¹

As educators have become more cognizant of educational possibilities for young children, the federal investment in early childhood education has grown. In 1968 about 475,000 prekindergarten children had been enrolled in programs funded through Title I, E.S.E.A. Although this federal legislation was designed to provide financial assistance to local educational agencies for the special education problems of low-income children at all levels, a continual shift in priority status to younger children has occurred. By 1975, many state guidelines for Title I had been rewritten to encourage the use of these funds for programs for three- and four-year-old children. All Title I guidelines require parental involvement, at least on an advisory basis to local school officials, and many recommend the involvement of parents in the actual learning process--both at school and in the home.

During the fiscal year 1977, Project Head Start and Title I, E.S.E.A., continued to provide funding for early childhood education programs for culturally deprived children. During this fiscal year, the major sources of new funds for prekindergarten children were earmarked for the handicapped. Legislation for special education of the handicapped under Public Law 93-380, Title VI-B of the Education of the

¹Klein, p. 99.

Handicapped Act, had as its priority the implementation of special programs for the handicapped prekindergarten child. Many of the innovative programs under Title IV-C, E.S.E.A., were also made available to these same children. New legislation under Public Law 94-142, the Education of all the Handicapped Act, is scheduled for implementation in fiscal year 1978 with priority funding to prekindergarten handicapped children. This legislation will supersede Title VI-B. Federal funding for these children was also available through the Bureau of the Educationally Handicapped.

To complement these federally funded programs, ten states have passed legislation and have implemented special funding for the handicapped child. One such state, Iowa, will serve children between the ages of zero and twenty-one with priority given to the prekindergarten child. This state uses a weighted formula which sends state funds to the local school district at a rate of from 2.0 to 4.0 times the rate provided for the non-handicapped child.

State participation. Liederman suggests that if a successful and permanent system of early childhood education is to be established, the commitment and responsibility for implementing it must be assumed by the states themselves. He believes the state is the most appropriate level of government for the planning, administration, and maintenance

of a comprehensive system serving prekindergarten children.¹ The difficulty with implementing this suggestion appears to relate to the source of funding. The states have not unilaterally assumed much responsibility for early childhood education.

Allen reported that by early 1974, almost twenty states had set up offices of Child Development to coordinate and plan more effective delivery of services to young children and their families.² It would appear that the states are becoming more aware of the need for early childhood education.

The Education Commission of the States has provided the impetus for state involvement in early childhood education. This organization was formed in 1966 to bring governors, legislators, and educational leaders together to improve education at all levels in the states. It is an interstate compact, the only national educational compact of its kind.³ The Commission has expressed continuing concern about early childhood education in the conviction that the states should assign a higher priority to the

¹David S. Liederman, "Why the States Must Take the Lead," Compact (July/August, 1973), 5.

²Sally V. Allen, "The Making of State Policy for Children," Childhood Education, LI (May, 1974), 325.

³Ibid.

formative years before first grade.¹ The Commission has worked with the states concerned about child development, has provided practical publications and materials for state legislators and governors, and has provided state leaders with consultation concerned with determining priorities and drafting legislation.

According to Governor Rampton of Utah, who was chairman of the Commission's Early Childhood Task Force in 1973, states must assume more responsibility for early childhood development services. The prospects for passage of comprehensive federal child care legislation in the next few years was not favorable and further growth in the field would depend on state initiative.²

Parental Involvement

Most investigators of early childhood education agree with the need for parents to take some responsible, organized, institutional role in prekindergarten education for their children. The prevailing attitude of separation between home and school, child rearing and education, was to some degree

¹Education Commission of the States, Early Childhood Development: Alternatives for Program Implementation in the States, A Report of the Education Commission of the States Task Force on Early Childhood Education (Denver: Education Commission of the States, 1971), p. 12.

²Calvin L. Rampton, "A Commitment in Jeopardy?," Compact (July/August, 1973), 3.

the outgrowth of the fixed view of intelligence and development, rather than on the current view of both cognitive and emotional development.¹ Until the mid-1960's parents were told that responsibility for education rested on the professional in the classroom. As a consequence of Head Start and other compensatory programs, educators began to concern themselves with parent involvement as soon as it became understood that the home greatly influenced the child's readiness to learn.

Those involved in early childhood education recognize the significance and importance of experiences in the home as being effective precursors of formal schooling. Highberger and Teets support the view that parental involvement in the education of young children is extremely important.

Parent involvement in a program for young children, or association with a program for children, promises to be more effective in changing parent behavior. For middle socioeconomic-class parents with time and interest, the cooperative nursery school has demonstrated changes in parent behavior in individual cases although there has been little systematic research on these changes. The research on modeling cited before in this paper offers some support for parents learning new techniques for working with their children through assisting a professional teacher working with

¹Ira J. Gordon, "Parent Involvement in Early Childhood Education," National Elementary Principal, LI (September, 1971), 27.

their children. Recently, Head Start and other intervention programs with "deprived" children (Gray & Klaus, 1970; Radin, 1972) have demonstrated the effectiveness of combining a program for young children with a parent education component.¹

It was reported by Butler that early childhood education, especially programs for children under six years of age, have always been viewed within the field of professional study as a supplement to the home environment.² Many programs maintained close contact with the home and tried to create as consistent an environment for the child as possible. Such programs, according to Moore and Moore, have shown encouraging results when they have involved working with the parent and child in the home along with providing an educational program for the parent.³

It appears that within the last decade educators have begun to support the development of parent intervention programs. Levitt and Cohen stated that "parent intervention programs generally have a dual focus: the first was on the mother as a person in her own right, and the second

¹Ruth Highberger and Sharon Teets, "Early Schooling: Why Not?," Young Children, XXIX (January, 1974), 75.

²Butler, "Early Childhood Education," p. 24.

³Moore and Moore, p. 19.

was on her role as teacher of her child."¹ Parent intervention programs for low-socioeconomic families focused on the mother, her background, and the subsequent influence she had on her children.

The second focus, that of facilitating the parents' role as teachers of their children, was provided through school-based, group workshops, or home-based programs. The school-based program has been the most common approach to supporting parents as teachers. Parents were invited into the school setting to observe their children where they might be asked to function as teacher aides. Programs of this type provided both formal and informal opportunities for interaction among staff, parents, and children.

A few parent intervention programs have relied exclusively on group workshops in preparing parents to work with their children. Initial workshop meetings were usually devoted to orientation, demonstration of techniques and materials, and provision of take-home materials for children. In subsequent workshops, parents often were given guidance concerning tutoring procedures to be used with their children. Parents involved in meetings conducted in a program for young children with low socioeconomic backgrounds were treated with the same respect as that accorded

¹Edith Levitt and Shirley Cohen, "Educating Parents of Children with Special Needs," Young Children, XXXI (May, 1976), 264.

to professional teachers.

Home-based programs, often a more intensive form of parent intervention, have been recently developed for culturally deprived children. Despite the diversity which exists in these types of programs, a number of common dimensions are discernible. According to Levitt and Cohen, home-based programs include the following: (1) All programs make some provision for orienting and pretraining workers; (2) These programs generally make provision for the informal orientation of parents toward the program's educational goals, approaches, and materials; (3) Paraprofessionals are usually parents or other adults drawn from the same socioeconomic background as culturally deprived children; (4) The approach most commonly used in parent intervention programs is to have the worker demonstrate ways of working with children as the mother observes; (5) The worker also usually provides parents with more specific guidance; (6) The worker generally takes the responsibility for evaluating the child's progress and formulates ongoing curricular objectives; (7) Parents are sometimes consulted about the selection of materials and asked for their suggestions.¹

It appears that the majority of early childhood education programs are now including parent involvement as a basic component. Many experimental programs have reported

¹Levitt and Cohen, pp. 267-270.

growth in the maturity of children when low-income mothers have been trained to participate in their education. According to Butler, there is a great deal of research available to support the importance of the model the parent sets for the child. It would seem logical that any appreciable enduring change made in the child can be effected only through an appreciable enduring change in the persons most intimately associated with the child on a day-to-day basis.¹

EFFECTIVENESS OF EARLY CHILDHOOD EDUCATION

There is little agreement among educators about the terminology, curriculum, and goals of prekindergarten education. Indeed, some educators question the value of early childhood education and even suggest such programs might bring possible damage to young children. The controversy begins at one extreme with those who hold the belief that three- and four-year-old children are ready for, and need, school. When given the opportunity to participate in a formal education program, children are afforded optimal opportunities to develop in affective and cognitive areas. They also argue that adequately trained early childhood educators can do much for young children that many untrained parents cannot be expected to do, or are not capable of

¹Butler, "Areas of Recent Research," p. 145.

doing.

At the other extreme are those who believe the best place for prekindergarten children is at home with their parents. Advocates of this position claim that prekindergarten education can be stultifying or over-stimulating and, in either case, harmful to young minds.¹ There is also a third group of researchers who do not take either of these two extreme positions. They feel that prekindergarten programs matter little and are essentially a high-cost baby sitting service.

Opponents of Prekindergarten Education

Those who oppose formal early childhood education programs before kindergarten point out the research findings of psychologists, psychiatrists, and physiologists in denying the need for such programs. The foundations for the argument against prekindergarten generally are found in three areas: the nativistic definitions of human nature; the skepticism generated by critics of present programs; and the belief that such programs are dangerous to the young child.

Nativistic definitions. These definitions of human nature assert that child development is determined largely

¹Moore and Moore, p. 16.

by biological inheritance including genetic patterns.¹ From the theoretical positions of the nativists, it is inferred that prekindergarten education would make little difference in the linguistic, cognitive, or affective progress of young children.

In the area of psycholinguistics, the dilemma centers around the extent to which biological or environmental factors govern the process of acquiring language competence, or the nature of the interaction between nature and nurture.² This dilemma is often termed the rationalist-empiricist debate.³ The rationalist (nature) takes the position that language depends upon an inherent ability to interpret and use language; the concept of such utilization presumably is built into the genetic system. Dunn reported that several nativistic psychologists, such as Chomsky, Lenneberg, and McNeill, contended that:

the human brain, at birth, is programmed for language acquisition so that all except the severely brain injured, retarded and deaf learn patterns of speech quite naturally, given almost any type of social environment.⁴

In the cognitive area of development, one of the best known theories is that of Piaget. As reported by Evans,

¹Dunn, p. 44.

²Evans, p. 181.

³Ibid.

⁴Dunn, p. 45.

Piaget maintained that children develop through identifiable cognitive stages, in invariant order, at uniform rates across cultures.¹ In Piaget's system of cumulative development, the cognitive stages are identified as the sensorimotor stage (birth to two years), the stage of pre-operational thought (two to seven years), the concrete-operational stage (seven to eleven years), and the period of formal operations (eleven years and over).² This theory is further strengthened since, according to Gaudia, empirical evidence shows that formal training does not hasten the appearance of new stages in cognitive development.³ Elkind suggests that "one clear implication of Piaget's research on young children's thinking is that formal instruction be delayed until the age six or seven, when most children can learn rules."⁴ He is referring to Piaget's conclusion of the young child's inability to internalize rules. Since all formal education involves the implication of rules, such as writing, spelling, reading, arithmetic, and art, it makes little sense to begin formal instruction in tool subjects until children can internalize and operate according to these rules.⁵

¹Evans, p. 195.

²Ibid., p. 196.

³Gil Gandia, "The Piagetian Dilemma," Elementary School Journal, LXXIV (May, 1974), 484-485.

⁴Elkind, p. 50.

⁵Ibid.

In the area of personality theory, some psychologists argue that biological makeup largely determines personality characteristics.¹ According to Evans, this theory is in contrast to the environmentalist theory. He is suggesting that personality is "developed largely through volitional motor and social play, including fantasy role enactments, in a responsive environment."²

Program failure. Critics of prekindergarten education conclude that the largest single effort nationally, Project Head Start, has been a dismal failure. Comprehensive previews by the U.S. Commission on Civil Rights (1967) and by Frost and Hawkes conclude that Head Start has not been effective in assuring lasting gains in affective, cognitive, or academic achievement. It is inferred from such a conclusion that the program did not narrow significantly the achievement gap between poor and middle class children. If such an inferred conclusion is accepted whereby deprived children received no significant growth, it should be even harder to demonstrate the effectiveness of early childhood education for children from higher socioeconomic backgrounds.³

¹Dunn, p. 45.

²Evans, p. 59.

³Joe L. Frost and G. R. Hawkes, The Disadvantaged Child (Boston: Houghton-Mifflin, 1970), p. 173.

White points out that, after nearly a decade of attempted preventive or remedial education under Head Start programs, a poorly developing prekindergartener is not often converted to an average or above-average elementary school student. He also concludes that, as far as academic achievement is concerned, Head Start clearly has not been effective for most of the target population.¹

Dangers of programs. The third viewpoint is contributed by those who say that prekindergarten education may be dangerous. Moore, Moon, and Moore cited three types of studies which they said supported the conclusion that early childhood programs may not be necessary and may hold the possibility of dangerous effects to the young child. The first involved early versus late formal school entry in which studies had demonstrated that children who entered school at the age of six soon caught up with those who had participated in prekindergarten education. The second type of study involved neurophysiology and cognition. These studies generally found no support for early formal instruction. The findings of neurophysiologists, psychologists, and medical personnel cited were in agreement as to the stages at which children normally were ready to think abstractly, or organize facts, and to sustain and retain

¹Burton L. White, "Preschool: Has it Worked?", Compact (July/August, 1973), 6.

learning without undue damage or strain. The third area involved maternal deprivation studies.¹

Moore and Moore argue that early childhood education can deprive the young child of needed mothering. Maternal attachment/deprivation studies demonstrated the cognitive and affective value of a warm, consistent, and continuing home environment which a planned school program could not provide. They cited Bowlby who suggested that dangers from maternal deprivation may exist until eight years of age or older. They advocated using educational resources to strengthen the home, reserving formal early childhood education for the deaf and other seriously handicapped children, and informal day care for young children of working parents.²

According to Moore, there was no evidence that early education should be provided for all children. The primary task with children was to build values and self worth. Research suggested this was best done in the home. He believed educators should work to strengthen the homes and develop parental understandings and care of children rather than taking children out of the home.³

¹Raymond S. Moore, Robert D. Moon, and Dennis R. Moore, "The California Report: Early Schooling for All?", Phi Delta Kappan, LIII (June, 1972), 617-619.

²Moore and Moore, p. 17.

³Raymond S. Moore, "Let's Keep the Little Kids Home," Compact, VII (November/December, 1973), 22-23.

Proponents of Prekindergarten Education

Four areas of opinion underlie arguments for early childhood education. These include: the environmentalists in the nature-nurture controversy; the studies suggesting that prekindergarten education at least can promote social development; those who base their point of view on studies which show that early childhood stimulation is likely to be more effective than later stimulation; and those educators who dispute the argument that prekindergarten programs can be dangerous to the young child.

The environmentalist view. This view can be characterized by the importance that Bloom emphasized for the early years of intellectual development and the significance of environmental encounters in that development. In a synthesis of existing research, Bloom concluded that "at least for extremes in environment there are clear-cut differences in the levels of intelligence reached by children". He hypothesized that the effects of environment appeared to be greatest in the early (and more rapid) periods of intellectual growth.¹

Regardless of one's theoretical orientation, many would agree that environment can play a decisive role in the development of the mind. What seemed crucial to the

¹Benjamin S. Bloom, Stability and Change in Human Characteristics (New York: John Wiley and Sons, 1964), p. 79.

discussion in the literature appeared to be which frame of reference the reader supported as being the most appropriate environment for learning--the home and the immediate neighborhood or a somewhat more organized educational setting. Certainly undesirable experiences for children may occur in any of these settings. According to Butler, the basic question is how one balances the responsibility of the family with the responsibility of the society to provide for the education of children. She states that school is the most stable experience in the lives of young children and that:

In the United States we currently have less proof of the effectiveness of the home, exclusively, in working with the child for the first seven years than we have of the effectiveness of the schools and the home as partners in working with the child for the first seven years.¹

In the linguistics area, strict behaviorists argued that oral language was learned solely through operant conditioning and speech patterns were built through a process of response and reinforcement.² Reported in a review by Evans, such speech patterns could not be learned from a home environment alone, since parents, whose abilities to teach children vary greatly, have not been provided typically with sufficient knowledge, skills, and materials.³

¹Butler, "Early Childhood Education," p. 25.

²Dunn, p. 46.

³Evans, p. 373.

In the area of cognitive development, Dunn expressed the opinion exemplified by the moderate environmentalists. This opinion hypothesized that any subject could be taught effectively in some intellectual honest form to any child in any stage of development.¹ Evans also points out the growth of conviction among psychologists about the crucial role of environment stimulation in children's cognitive development.² Fowler's early analytic review of early cognitive learning led him to the conclusion that the early years were better than those later in the development sequence for building conceptual learning sets, interests, and habit patterns. He further promoted a cognitive-stimulation approach for prekindergarten education of culturally deprived children.³

In the area of personality development, Dunn pointed out that the newborn child was lacking a personality and must develop one through "reactive mechanisms" in response to the environmental situations in which he found himself.⁴ For Evans, personality development during the first six years of life involves the achievement of a basic sense of

¹Dunn, p. 46.

²Evans, p. 2.

³Fowler, p. 35.

⁴Dunn, p. 46.

trust, autonomy, and initiative.¹ What is needed was an environment of safety and free exploration. Early education could provide these approaches which might or might not be available in the home environment.

Social development. A second body of literature underlying arguments for prekindergarten education were studies suggesting that early childhood education programs did promote social development. Research evidence suggested that programs which had social development as the curricular emphasis resulted in the reduction of children's infantile behaviors.² These children generally had become adjusted socially. Highberger and Teets concluded that studies demonstrated that children who showed extreme social withdrawal became more socially responsive when participating in a prekindergarten program.³

White, who earlier was cited as criticizing Head Start for its poor academic effects on children, conceded that Head Start may have substantial health and social development benefits which have not been measured.⁴ Shane suggested that one attribute of most developmental early childhood programs will be improved level of socialization of the young child. He said this will be reflected in the

¹Evans, p. 59.

²Dunn, p. 46.

³Highberger and Teets, p. 73.

⁴White, p. 6.

child's better adjustment to school routines and organization and to the roles of teachers and other personnel.¹

Those who have followed the descriptions of many of the widely publicized programs of cognitive learning in this country might have inferred that other areas of development in the young child were not important. There appears to be more interest and concern in this area now than in previous years. Butler stated that there are relationships between adjustment problems in early childhood education programs and those experiences later in life. Butler further stated that advocates of such programs believed they contributed to better human relations.²

Early stimulation. Advocates of early childhood education often base their point of view on influences drawn from Bloom's statement that 50 percent of intellectual development is attained by the age of four, as are most other human characteristics. Furthermore, he observed that it becomes more and more difficult to change many human characteristics as they become more fully developed.³ Conclusive evidence is still not available a decade after Bloom's study to substantiate or refute his theoretical

¹Shane, p. 32.

²Butler, "Areas of Recent Research," p. 146.

³Bloom, p. 88.

positions. It appears the implication is that stimulation in early childhood is likely to be more effective than stimulation at a later point in life.

The dangers of programs. There appears to be a great amount of pertinent and fundamental literature available in rebuttal to the Moore, Moon, and Moore article which stated a possible hazard to young children participating in early childhood programs.¹ For example, Highberger and Teets supported the conclusion that "multiple mothering" was not detrimental to normal children and did not reduce their attachment to their mothers. They argued that pre-kindergarten education actually helped three-year-old children develop a sense of autonomy and initiative, especially when they were separated gradually from their parents without undue anxiety. They went on to point out that many homes could not provide the space, equipment, and adult guidance for children to learn adequately about the world around them.²

Butler generally concurred with the opinion of Highberger and Teets concerning the young child's separation from his mother due to participation in a prekindergarten program. She suggested further that "it is unbelievable

¹Moore, Moon, and Moore, p. 615.

²Highberger and Teets, pp. 67-68.

that any parent would equate two to three hours spent in a good educational program with maternal deprivation."¹

Summary. Several writers viewed early childhood education programs as a means to positive change in the public school systems. Klein stated that Head Start strongly influenced the curricula of the nation's kindergarten, the acceptance of paraprofessionals by the public school systems, the professional educator to design programs that were relevant to the cultural and ethnic backgrounds of children, and the encouragement of extensive research in areas related to early childhood.² Shane suggested that a "domino effect" on the elementary school would take place. He said that one of the most significant aspects of early childhood education might, in the long run, prove to be the chain reaction of innovations it could trigger in education as a whole.³

RELATED RESEARCH IN EARLY CHILDHOOD EDUCATION

The last twelve years have brought about an increased interest in the effect of educational programs on the child's cognitive abilities. Most of the research, particularly government funded programs specifically directed toward

¹Butler, "Early Childhood Education," p. 24.

²Klein, p. 103.

³Shane, p. 35.

culturally deprived children, has placed a high priority on cognitive development. This has brought about a new interest by researchers in measuring the success of such programs by using IQ tests. According to Butler, participation in intervention programs helps to stop progressive retardation of culturally deprived children, but does not close the gap between them and middle-class children.¹

Studies Reporting the Effects of a Prekindergarten Experience on Children

In examining the research regarding early childhood education, emphasis has been placed upon studies completed during the last decade. In a study conducted at a demonstration child development center, Rodman (1973) attempted to evaluate children's intellectual growth and development in a planned educational prekindergarten curriculum.² Ten children from the center were used as the experimental group. The researcher decided that these children had to be enrolled in the center for at least ten months before they could be included as part of the sample. During the first week of their attendance at the center, the children

¹Butler, "Areas of Recent Research," p. 144.

²Joan I. Rodman, To Evaluate Children's Intellectual Growth and Development in the Southeast Kansas Demonstration Child Development Center, Fort Scott, U.S., Educational Resources Information Center, ERIC Document ED 076 245, February, 1973.

were administered the Denver Development Screening Test. After ten months, the children were evaluated with the same test. The Walker Readiness Test, Forms A and B were also administered at the end of the ten month period. A pretest was not administered since the test was not available until five months had elapsed.

Ten prekindergarten children not attending this center or any other type of early childhood center were selected for the control group. These children were administered the Denver Developmental Screening Test during the first month that the center was in operation. After ten months, to coincide with the experimental group, the Denver Developmental Screening Test was also administered, as was the Walker Readiness Tests, Forms A and B.

The results of this study indicated that the experimental group showed a higher, but not significant, average in their reading readiness scores. It also showed a greater, but not significant, increase in their overall growth and development. The conclusions derived from this study seemed to demonstrate that a curriculum-oriented-child development center which encouraged growth and development helped a child in the areas of reading readiness skills, physical co-ordination, and socialization skills.

Beller (1972) investigated the interplay of motivation and socioemotional interactions between the child and his educators on the later development of culturally

deprived children.¹ The study attempted to concentrate on obtaining a broad spectrum of the child's functioning and changes in the child's functioning over time. The focus was equally on immediate and long range effects of early educational intervention. By attempting to encompass a wide range of the child's functioning and a broad temporal span, it was hoped to avoid fragmented findings.

A sample was drawn from four public schools located in an urban slum area, and black children constituted 71 percent of the population in the target area. Each of the four schools in the area opened a nursery program for fifteen four-year-old children. Each classroom had one head teacher and one assistant teacher and the classes operated four days a week. On the fifth day, the teachers were engaged in a continuation of their in-service training program, making home visits, and working closely with parents and school personnel.

Three groups of children were used in the study: (1) an experimental group consisting of children involved in the nursery school at age four; (2) a control group consisting of children entering school at age five; and (3) a control group consisting of children entering school at age six.

¹E. Kuno Beller, Impact of Early Education on Disadvantaged Children, U.S., Educational Resources Information Center, ERIC Document ED 069 428, 1972.

The three groups did not differ from each other in their intellectual functioning when entering school. The researcher tested these children periodically until they completed grade four. The Stanford-Binet Test, the Peabody Picture Vocabulary Test, and the Goodenough Draw-a-Man Test all were used in the analysis.

The findings indicated an increase of over six points in IQ (92.1 to 98.6) from nursery to kindergarten, an increase of over two points in IQ (92.2 to 94.4) for the children entering kindergarten to their performance in the first grade, and a decrease in IQ for children entering school at first grade (from 89.9 to 88.6). These changes were found to differ significantly from one another when tested by an analysis of variance for repeated measures ($p < .01$). This study concluded that the measured increase in the level of intellectual functioning resulting from a child's initial exposure to formal education is greater the earlier the child starts school.

DiLorenzo (1968) randomly assigned 780 three and one-half to four and one-half year old culturally deprived children to experimental and control groups.¹ The control group received a traditional half-day nursery school program

¹Louis T. DiLorenzo and others, Prekindergarten Programs for the Disadvantaged: A Third-Year Report of an Evaluation Study, U.S., Educational Resources Information Center, ERIC Document ED 030 541, December, 1968.

while the experimental group experienced three different treatments varying in rationale, content, and time of exposure. This lack of consistency in the independent variable was explained as resulting from the large numbers of school districts involved. For various reasons 465 children were available for posttesting from the Stanford-Binet Test and Peabody Picture Vocabulary Test.

The results indicated that the experimental group had exhibited no change on the Stanford-Binet Test, while the control group had a significant mean loss of 2.55 points ($p < .05$). It was concluded that such enrichment programs have the potential of preventing regression that frequently is encountered.

In another study by DiLorenzo (1969), approximately eighteen hundred children from eight school districts in New York state were selected for the purpose of evaluating the effects of year-long prekindergarten programs for culturally deprived children.¹ The study focused on factors which the school considered important; major objectives of the programs were intelligence, language, self-concept, and physical development. The basic design for this study was a longitudinal experimental paradigm with two replications.

¹Louis T. DiLorenzo, Prekindergarten Programs for Educationally Disadvantaged Children, Final Report, U.S., Educational Resources Information Center, ERIC Document ED 038 460, December, 1969.

The basic data were collected on three successive groups of children who were pretested, assigned to experimental and control treatments, posttested, and followed into kindergarten, first, and second grade. The Stanford-Binet Test and the Peabody Picture Vocabulary Test were used as pre-test instruments and to pair children for the two groups. These two instruments in addition to the Illinois Test of Psycholinguistic Abilities were given at the end of the prekindergarten year.

As a follow-up to the prekindergarten experience, the Metropolitan Readiness Test was given at the end of the kindergarten year to measure school readiness. At the end of first grade, the Metropolitan Achievement Test, Primary I Battery, was administered to check school achievement. Achievement also was measured at the end of the second grade with the Metropolitan Achievement Test, Upper Primary Battery.

The experimental group of cognitive prekindergarten programs scored significantly higher on tests given at the end of the prekindergarten, kindergarten, and first grade years than did the control groups. However, by the end of grade two, there were no significant differences between achievement scores of the two groups.

Lysiak (1973) conducted follow-up research on children who had been enrolled in the Central Cities Early

Childhood Program.¹ The purposes of this study were to determine: (1) the long-range effectiveness on children's cognitive and affective development of one, two, and three years of the program; (2) how long prekindergarten intervention must be continued to significantly alleviate special problems of culturally deprived children; and (3) the optimum age to begin prekindergarten intervention.

During the three-year period of operation, from September 1968 to June 1971, five groups of children whose ages were two through five were enrolled in the program for varying lengths of time and entered at various ages. These children had been enrolled for at least one year in the program funded under Title III, E.S.E.A. Lysiak was able to test 175 of the original 220 children from Spring 1972 through Spring 1973. These test dates including two others, the pre- and posttests administered to program participants, allowed the researcher to determine longitudinal mean score gains for each group. The Slosson Intelligence Test and the Peabody Picture Vocabulary Test were used and only children with scores from all four testing dates were included in the study.

Results from tests given at the beginning and at the

¹Floy L. Lysiak, Follow-up Research on Children Who Were Enrolled in the Central Cities Early Childhood Program. Final Report, U.S., Educational Resources Information Center, ERIC Document ED 082 828, June, 1973.

end of the early childhood year indicated that children increased their scores on these tests in direct relationship to the number of years in the program. The follow-up research indicated the program effectively helped children develop an adequate self-concept, as well as social, emotional, motor, and physical skills for successful peer and teacher relations two and three years after their prekindergarten experiences. During and one year after prekindergarten, children had maintained IQ gains as measured by the Peabody test. After three years in the program, first grade entrants scored significantly higher on a school readiness test than did their classmates, but did not achieve as well as predicted by the end of first grade. Two years after the prekindergarten program, children with three years of prekindergarten experience made one year's gain on an achievement test but were below grade level on national norms. It was also noted that two years after the conclusion of the program, children's IQ scores were not significantly different from their scores at the time they entered the program.

It was concluded that children with three years of continuous intervention before entering the first grade progressed more satisfactorily and retained gains longer than children having one or two years of intervention. Also, because the program alone was not able to sustain the disadvantaged child's progress during primary years, it was

recommended that further supportive experiences for such children be included by the school system in primary programs.

In a similar study, Coffman and Dunlap (1968) examined the effects of a prekindergarten experience on children at the end of the early childhood year and after they had completed kindergarten.¹ The research involved matched groups of children representative of the local population. The experimental children were designated by chance and complete data for ninety-one experimental and 115 control children were available for analysis. The developmental needs of these children (motor, auditory, language, visual, retention) were identified by a test battery which included the Developmental Test of Visual Motor Integration, Illinois Test of Psycholinguistic Abilities, and the Peabody Picture Vocabulary Test.

Results indicated that at the completion of the pre-kindergarten year the experimental group surpassed the control group at a statistically significant level of confidence ($p < .05$). The kindergarten experiment was a follow-up study of the prekindergarten children of the

¹Alice O. Coffman and James M. Dunlap, The Effects of Assessment and Personalized Programming on Subsequent Intellectual Development of Prekindergarten and Kindergarten Children. Final Report of Phase II, U.S., Educational Resources Information Center, ERIC Document ED 023 487, July, 1968.

previous year. Complete data were available for analysis on eighty experimental children, sixty-four control children who had attended nursery school, and sixty control children who had not participated in any early childhood program. Results indicated that the experimental group did not maintain the superiority at a statistically significant level from the previous year.

In a project to improve the education of culturally deprived children, Kershner (1969) studied the effect of a prekindergarten program which focused on children's specific behavioral deficits, teacher preparation, parent attitudes, health and service agencies, and local school districts.¹ The project was carried out in a rural low-income Appalachian school with 122 children, 70 percent white and 30 percent non-white, as well as an urban low-income school with 350 children, 95 percent white and 5 percent non-white. An emphasis on individualization and an ungraded teaching approach was used in the rural school for children in kindergarten through third grade. Teachers met with testing and curriculum consultants; parents attended group meetings; and future program plans were made by the local school district. The urban school program was similar but had a

¹Keith M. Kershner, Pennsylvania Preschool and Primary Education Project: 1968-1969 Fiscal Report to the Ford Foundation, U.S., Educational Resources Information Center, ERIC Document ED 033 759, October, 1969.

more active and successful parent education program and better coordination of agencies.

To evaluate the program, all children were pre- and posttested, using the Oral Language Scale, the Science and Math Study Group Individual Math Inventory, the Metropolitan Achievement Test, and the California Test of Mental Maturity. The results of the study showed that both groups of children made significant cognitive gains and the teachers in both schools improved in knowledge of education for the culturally deprived.

In another study, a Title III, E.S.E.A. project was designed in the Colorado Springs Public Schools (1972) to identify underdeveloped or abnormal behavior characteristics in the prekindergarten child and to initiate an educational treatment plan which would ameliorate the developmental problem.¹ The participants were identified from approximately one thousand children attending nursery schools or Head Start classes. Identification of disabled children was made from the various schools and sixty-five children were included in the program. Forty of the more severely disabled were enrolled in one of four special daily classes and received prescribed instruction from two teachers

¹Colorado Springs School District 11, Colorado, Focus on Preschool Development Problems. Final Evaluation Report, 1971-1972, U.S., Educational Resources Information Center, ERIC Document ED 078 945, 1972.

assisted by two aides. The other twenty-five received training at home from their parents under the supervision of the diagnosticians. Diagnostic attention focused on four syndromes which provided a broad base for interpreting a child's deficit behavior. These included the visual perception functions, the visual motor functions, and all aspects of auditory functions which primarily affect speech and language capabilities.

The evaluation data consisted of both process and product evaluation with input from parents, teachers, students, and specialized personnel. Scores from the Wechsler Pre-School and Primary Intelligence Test were used in the analysis. The data indicated that children showed gains in IQ scores and had demonstrated progress in readiness scores at the end of kindergarten. First grade achievement scores were lower than readiness prediction, indicating that the children were regressing once intensive treatment had ceased.

The Westinghouse Learning Corporation and Ohio University (1969) conducted a large scale study to determine whether the gains of children given prekindergarten experience relative to those who had no such experience were maintained through the elementary grades. In this study a sample equal to 104 summer and full-year Head Start centers was

selected representing a cross-section of the country.¹ Children who had participated in the activities of these centers and were in the first, second, or third grades were tested with the Metropolitan Readiness Test, the Stanford Achievement Test, and the Illinois Test of Psycholinguistic Abilities. Children in the control groups from each location who had no Head Start experience and were also in the first, second, and third grades were selected and tested with the same instruments. All children had resided in their respective areas since the inception of Head Start. Relevant differences were not found in the personal and background characteristics of the experimental and control samples. No relevant differences were found between the remaining control sample and the population of non-Head Start people who had migrated from their areas since the inception of Head Start. The samples were reasonably similar except for the fact that some children had received a pre-kindergarten experience.

The findings of this study were: (1) summer programs were ineffective in producing lasting gains in affective and cognitive development; (2) full-year programs were ineffective in aiding affective development and only marginally

¹Westinghouse Learning Corporation, New York, The Impact of Head Start: An Evaluation of the Effects of Head Start on Children's Cognitive and Affective Development, U.S., Educational Resources Information Center, ERIC Document ED 036 321, June, 1969.

effective in producing lasting cognitive gains; (3) all Head Start children were still considerably below national norms on tests of language development and scholastic achievement, while school readiness at grade one approached the national norm; and (4) parents of Head Start children voiced strong approval of the program.

Summary of Reported Studies

It appears that many early childhood education programs produced intellectual gains at the end of their prekindergarten experience for culturally deprived children and the intellectual improvement remained stable at least through one year of public school experience. The programs also were generally successful in bringing these children to an adequate level of first-grade readiness. However, longitudinal studies have shown that these gains were lost after a period of two or three years in the public school. Studies tended to conclude that the increase in the child's intellectual functions were based on his initial exposure to formal education. It appeared that there was a relationship between the number of years a child attended an early childhood education program and the child's ability to successfully maintain achievement levels in the primary grades. This gain was not maintained after three years in the public school.

Regardless of the results, teachers and parents

strongly approved of prekindergarten programs. Studies did tend to show longitudinal growth in areas other than the cognitive area. These areas included social, emotional, motor, and physical development. It is important to note that impact in such affective or non-instructional areas had not been substantiated through empirical research.

Chapter 3

METHODOLOGY AND DESIGN

A discussion of the procedures and instruments used in the study is presented in this chapter. The design of the study, the rationale for the study, a description of the project, and the selection of the population are given. A description of the instruments used in selection of the population and the instruments used to measure growth and status factors are presented. Attention is drawn to the statistical design used to analyze the data.

DESIGN OF THE STUDY

The basic purpose of the study was to examine a formal prekindergarten educational program by comparing growth and status factors of culturally deprived children who had participated in an early childhood program with children of similar backgrounds who had not participated in such a program. Culturally deprived prekindergarten children in an early childhood program were examined for retention of growth. To accomplish this, data were collected from tests given children participating in an early childhood program for three separate project years, beginning with the school year 1973-74 and ending with the school year 1975-76.

Data for the research project were taken in five elementary schools designated as project area centers.

These five elementary schools met the eligibility criteria of the regulations as set down by the Title I, E.S.E.A. legislation. The Iowa Department of Public Instruction had approved three of these centers as project schools for the early childhood program. They were funded by Title I, E.S.E.A. and made up the experimental school-based group. The other two schools, although meeting the same criteria as the three project schools, were not included in the experimental school-based part of the project because federal funds were not available. These two schools were used to identify children for the experimental home-based group and the control group.

The participants in the experimental school-based group varied from eighty-two to ninety-six four-year-old prekindergarten children during the three years designated for the study. Different four-year-old children were included for each project year.

During the first project year, 1973-74, an experimental school-based group was established. The second project year, 1974-75, included an experimental school-based group and a control group. The third project year, 1975-76, included an experimental school-based group, a control group, and an experimental home-based group.

The Slosson Intelligence Test for Children and Adults was administered to all children, including those in the two types of experimental groups and the control groups, at

the beginning and at the end of their prekindergarten year for each project year. In addition, this same test was administered to a sample of the children who participated in the 1973-74 project after these children had completed grade one. These scores were compared with the IQ scores taken at the beginning of the prekindergarten year using a t-test for correlated data as the statistical technique.

A sample approximately equal in number to that of the control group for the project year 1974-75 was taken from the experimental school-based group. The Comprehensive Test of Basic Skills was administered to both groups at the beginning and at the end of their kindergarten year. A t-test for the difference between mean change scores of independent samples was employed to analyze the reading and mathematics achievement of the two groups during their kindergarten year.

The Metropolitan Readiness Test was also administered at the end of the kindergarten year to these groups from the 1974-75 Early Childhood Program. To investigate reading readiness status of the two groups on this test, a t-test for a difference between means of independent samples was first employed. Reading readiness was also investigated by analyzing the within-ability-level status of the two groups while equating out the measured IQ. A t-test for correlated data was then used in the analysis process.

Both experimental groups and the control group of

the 1975-76 project year received two different tests in addition to the IQ test. Each test was given at the beginning and at the end of the children's prekindergarten experience. These two tests were the Developmental Test of Visual Motor Integration and the Illinois Test of Psycholinguistic Abilities: Grammatical Closure Subtest.

Using the pretest scores, a discard process was employed to form the final comparison groups. The posttest scores were then separately analyzed using a one-factor analysis of variance technique. The Scheffe' Test for pair comparisons was used whenever statistical significance in the analysis of variance test was found.

The Boehm Test of Basic Concepts was also administered at the beginning and at the end of the prekindergarten year to the two experimental groups of the 1975-76 project year. By utilizing raw scores from the pretest, subjects from each group were selected and matched in order to equate the two groups. A t-test for the mean difference in correlated samples was then applied to the posttest scores in order to analyze the data.

PROJECT DESCRIPTION

The data for the study came from a project funded by Title I, E.S.E.A. This project proposed to develop an early childhood program for selected prekindergarten children in target school areas that would: (1) provide professional

screening and diagnostic procedures to identify each child's needs; (2) alleviate developmental lags and deficiencies, and (3) design an individualized remedial program for the participants. Parental involvement in all phases of the program was encouraged at home as well as in the center, thus, assuring understanding and follow-through of prescriptive activities.

It was the desire of the researcher that the objectives of the project would show that participating children, when compared with similar children who were not able to participate in such a formal early childhood program, would show a statistically significant increase in cognitive ability, concept formation, and the ability to express themselves in a grammatically correct manner. Also, the project teachers hoped that children identified as showing developmental deficiencies in socialization skills would, between the beginning and the end of the prekindergarten year, exhibit growth in predetermined skills.

The basic purpose of this project was to diagnose the needs of each child and to provide individually prescribed activities to meet these needs. The major thrust of the program was the instructional component, supported by parental involvement and health education.

The project took place in a midwestern city of 110,000 people surrounded by a large agricultural area. This city is a trade and distribution center for eastern

Iowa, and much of its light industry is devoted to the processing of food. The school district serves approximately 23,000 pupils in thirty-seven schools. Of this total number, 2,200 pupils qualified for programs funded under Title I, E.S.E.A.

The experimental school-based portion of the project was located in three schools and each school operated a morning and an afternoon session involving no more than sixteen children per session. Each child attended classes four days per week, Monday through Thursday, for two and one-half hours per day. Each child participated in approximately six hundred minutes of classroom time per week. Friday of each week was devoted to program planning and review, staffing with resource personnel, parental involvement, and inservice training.

The school year followed that of the regular elementary school calendar, including inservice and clerical days, holidays, and vacations. The week before school started, early childhood teachers were involved in a program of inservice training and room preparation.

The first three weeks of school were devoted to selecting program participants and holding health clinics. During this period, a home visit was made to meet the parents and the child, to assess the child in his home environment, and to review program goals with parents and explain their involvement in the program. Children who

were to participate in the experimental school-based centers met as a class group starting in late September. Early childhood classes ended the last week in May. The following week was devoted to program completion, evaluation, record-keeping, home visits, and visits with kindergarten teachers.

During the 1975-76 school year each Early Childhood Center included one certified teacher and two associates. Other staff in the project included one evaluation technician, one speech clinician, and one nurse. The services of the project staff were supplemented by the building psychologist, counselor, and media specialist.

Staff inservice sessions were scheduled throughout the year. Pre-service included a training period in (1) administering various screening and evaluation instruments and interpreting the results, (2) conducting home visits, and (3) reviewing the project handbook and objectives. Friday staff meetings were held once each month in one of the centers so that teachers had opportunities to share new or different materials and activities for accomplishing project objectives. Throughout the year, workshops were conducted by the speech-language clinician, the early childhood nurse, the project resource staff, and other school and/or Area Education Agency specialists.

Upon admission to the early childhood program, records of each child's test results were analyzed to

provide data concerning the areas of auditory and visual perception, gross and fine motor skills, visual motor integration, and expressive and receptive communication. Using this profile of strengths and weaknesses, the early childhood staff established instructional objectives for each child.

Teachers kept individual logs of each child which detailed the progress he made through the individualized sequence of objectives and activities designed for him. Children with suspected deficiencies in speech and language beyond the scope of planned classroom experiences were referred to the early childhood speech clinician for intensive therapy.

Total group experiences such as cooking, storytime, and field trips provided opportunities for development of socialization skills and expansion of each child's understanding of the world in which he lived. Daily activities were conducted in a warm, accepting environment and were directed toward the development of the whole child--his mental, social, physical, and educational being.

The health component included the assessment of the medical needs of children: dental, visual, and hearing screening. Health histories for each child were taken, and children who had not yet had physical examinations were referred to their private physicians. The nurse participated in staffings of children and contributed information toward

the formation of a prescriptive plan for each child's developmental program.

In addition to serving on Title I Parent Advisory Councils and Boards, parents were involved in activities which included meetings and workshops, volunteer work in the Center, and home visits by staff members. Staff members periodically conducted special workshops, covering such topics as safe toys, good books for children, construction of "at-Home" learning materials, and techniques for working with and disciplining young children. Resource personnel were available to consult with parents when their children had special needs.

SELECTION OF THE POPULATION

The experimental school-based groups of the Early Childhood Program operated in regular kindergarten rooms at three target schools. These schools were chosen from the list of eligible Title I schools according to need as shown by the kindergarten Metropolitan Readiness Test scores and the school census. Any child residing in one of these three school attendance areas who was four years old by September fifteenth was tentatively eligible as a participant in the experimental school-based group. Letters were sent to all parents of these prekindergarten children and interested parents contacted the early childhood staff to schedule screening dates. A concerted effort was made by

project staff to contact all parents and to screen all such children during the first three weeks of September. These children were administered the Slosson Intelligence Test for Children and Adults, the Illinois Test of Psycholinguistic Abilities: Grammatical Closure Subtest, and the Developmental Test of Visual Motor Integration. A personal parent-child-teacher interview was held by the project staff for all children scoring below the fortieth percentile on at least one of these testing instruments. At this time final determination was made as to whether the child would participate in one of the experimental school-based groups.

In addition to the school-based program there was an experimental home-based group and a control group involving children who resided in two other Title I target area elementary schools. These children were also tested during the first three weeks of September with the same instruments, and they had to meet the same requirements as the experimental school-based group to be participants in one of these groups.

For the 1973-74 school year only two centers were in operation and a total of eighty-eight children were screened. This resulted in an initial enrollment of eighty-two children in the program for that year.

For the 1974-75 Early Childhood Program, 161 children were screened for admission to the experimental school-based groups. One hundred five were eligible on at least one of

the three criteria previously described and ninety-six were accepted into the program. In addition to these children, eighty-three children living in the two other Title I attendance areas not served by the experimental school-based groups were screened in order to establish the control group. Thirty-one of these children met the criteria established for admission to the program. Table 1 summarizes the screening, eligibility, and admission data for the 1974-75 Early Childhood Program.

TABLE 1
1974-75 EARLY CHILDHOOD PROGRAM
PUPIL SUMMARY

Group	Number Screened	Number Eligible	Number Participating
Experimental School-based	161	105	96
Control	83	40	31

For the 1975-76 Early Childhood Program, two hundred children were screened for admission to the experimental school-based group, using the three tests specified in the section on eligibility. One hundred ten different children were enrolled in this group during the year. Although all children received pre- and posttests, the evaluation number consisted only of those children enrolled in the program on

or before the first day of November, 1975. These children constituted the experimental school-based group.

The experimental home-based group was made up of twenty-one children, all of whom were pre- and posttested with the same instruments used with the experimental school-based group. The control group was made up of nine children who qualified for the program but received no treatment. Table 2 summarizes the screening, eligibility, and admission data for the 1975-76 Early Childhood Program.

Reductions in numbers occurred in each of the groups during each of the three school years because of the following factors:

1. Some families moved out of the school district prior to the end of the testing period of the study.
2. For purposes of the study, equal numbers of children in each sex sub-group were desired for the statistical treatment of the data from the 1973-74 Early Childhood Program. Therefore, by means of random selection from the fifty-six children still residing in the school district at the end of the school year 1975-76, the total in each sub-group was reduced to eleven children. The random selection was done by assigning numbers consecutively to the eligible individuals, and the table of random numbers in Basic Statistical Methods by Downie and

TABLE 2
1975-76 EARLY CHILDHOOD PROGRAM
PUPIL SUMMARY

Groups	Number Screened	Number Eligible	Number Enrolled	Mean Age	Age Range	Number Dropping	Evaluation Number
Experimental School-based	200	129	94	4.5	4.0-5.8	15	79
Experimental Home-based	47	40	31	4.5	4.0-5.0	9	22
Control	19	9	NA	4.5	4.1-5.0	0	9

Heath was used to select the members of the sample.¹

3. For purposes of the study, approximately equal numbers of children in the control group and the experimental school-based group were desired for the statistical treatment of the data from the 1974-75 Early Childhood Program. The control group had previously been set at thirty-one children based on the availability of these subjects. From this original control group of thirty-one children, twenty-one were available for further testing at the end of the 1975-76 school year for the analysis of data. Therefore, by means of random selection from the original experimental school-based group, the total number in the experimental group was reduced to twenty-six children.
4. For purposes of the study, equal numbers of children in the experimental school-based group and the experimental home-based group were desired for the statistical treatment of the data from the 1975-76 Early Childhood program. It was further desired that these two groups be selected in such a fashion that the standard deviation and mean of each

¹N. M. Downie and R. W. Heath, Basic Statistical Methods (New York: Harper and Row, Inc., 1974), pp. 324-325.

group based on the pre-test scores be equal to the standard deviation and mean of the pre-test scores for the control group. The control group had previously been set at nine children based on the availability of these subjects. Therefore, by means of random selection from the original experimental groups, the subjects were selected until the criteria of equal means and standard deviations were met. This resulted in a reduced total in each experimental group of sixteen children for analysis of data from the Slosson Intelligence Test and the Illinois Test of Psycholinguistic Abilities; twelve children for analysis of data from the Developmental Test of Visual Motor Integration. Twenty children from each group were paired for an analysis of the data from the Boehm Test of Basic Concepts.

THE SELECTION OF INSTRUMENTS

Slosson Intelligence Test for Children and Adults.¹

This test is a brief individual test of intelligence designed to be used by relatively untrained examiners as well as

¹Richard L. Slosson, Slosson Intelligence Test for Children and Adults (East Aurora, New York: Slosson Educational Publications, 1963).

qualified professionals in working both with children and adults. It is an adaptation of items from the Stanford-Binet, but with a lower base (two weeks) and a higher ceiling (twenty-seven years).

The standardization sample, children and adults from both rural and urban populations in New York State, includes both gifted and retarded children. All questions are presented verbally and require spoken responses. Item content stresses mathematical reasoning, vocabulary, auditory memory, and information.

Metropolitan Readiness Test.¹ This test was devised to measure the extent to which school beginners developed in the skills and abilities which contribute to readiness for reading. It was designed to test pupils during the kindergarten year or the beginning of first grade. The purpose of the test was not to measure the effectiveness of kindergarten, but rather serve as a basis for classification of students. The six subtests which made up this test were:

Test 1. Word Meaning, a 16-item picture vocabulary test. The pupil selects from three pictures the one that illustrates the word the

¹Gertrude H. Hildreth, Nellie L. Griffiths, and Mary E. McGauvran, Metropolitan Readiness Test (New York: Harcourt Brace Jovanovich, Inc., 1969).

examiner names.

- Test 2. Listening, a 16-item test of ability to comprehend phrases and sentences instead of individual words. The pupil selects from three pictures the one which portrays a situation or event the examiner described briefly.
- Test 3. Matching, a 14-item test of visual perception involving the recognition of similarities. The pupil marks one of three pictures which matches a given picture.
- Test 4. Alphabet, a 16-item test of ability to recognize lower-case letters of the alphabet. The pupil chooses a letter named from four alternatives.
- Test 5. Numbers, a 26-item test of number knowledge. The pupil selects from three pictures the one which denotes size, time, and other number concepts.
- Test 6. Copying, a 14-item test which measures a combination of visual perception and motor control. The pupil reproduces a number of designs independently from a number of given designs.

The normative population of the 1965 edition of the Metropolitan Readiness Test included a total of 12,231 students in 299 schools. Reliability testing using an

alternate form (Form B) for retest produced a correlation of .91 in a study consisting of 546 kindergarten pupils.

Comprehensive Test of Basic Skills.¹ This test is a series of batteries for kindergarten through grade twelve. The batteries comprise seven overlapping levels. The test rationale required that it measure systematically those skills prerequisite to studying and learning in school. In the primary levels, and particularly at Level A, the subject matter on which a pupil can be tested is quite limited. In some tests of Level A, such as Letter Names, only Recognition, i.e., recall of facts, is measured.

According to the test manual, in the development of Levels A, B, C, items were administered in October 1971 to a total of 3,999 pupils. All items chosen for these tests met the content criteria for the test, had a level of difficulty appropriate for the grades for which they were intended, had point-biserial correlation coefficients greater than .20, and contributed to the reliability of the test for both samples. The selected items were next combined in a prestandardization edition and were administered in April 1972 to a sample of 1,300 students to evaluate the functional range of that combination of items.

¹Comprehensive Test of Basic Skills (New York: McGraw-Hill Book Company, Inc., 1970).

Levels A and B were standardized in the fall of 1972 and spring of 1973 on a large national sample of kindergarten and first grade students in schools randomly selected from all regions and states of the United States. The sample included public and private school pupils proportionate in number to actual enrollments.

The Level A battery contains eight tests. The scores of all tests, excluding the mathematics test, produce a total prereading score.

Illinois Test of Psycholinguistic Abilities.¹ This is a test of language, perception, and short-term memory abilities and represents a unique tool for diagnosing learning difficulties. It has the desirable quality of being based on a reasonably well-developed psycholinguistic theory which describes the receptive process for language; the organizing process--which deals with the internal manipulation of percepts, concepts, and symbols; and the expressive process. The test attempts to assess quality of performance within each of these three processes.

The normative population comprised 962 children of average intelligence (IQ of 84 to 116), from middle class schools located in medium-sized cities in the midwest. As

¹Samuel A. Kirk, James J. McCarthy, and Winifred D. Kirk, Illinois Test of Psycholinguistic Abilities (Urbana, Illinois: The University of Illinois Press, 1968).

a measure of stability, a retest of this instrument was conducted after a five-month interval for fifty-five six-year-old children. The reliability ranged from .12 to .86 with a median of .50 for the twelve subtests.

The Grammatical Closure Subtest assesses the child's ability to make use of the redundancies of oral language in acquiring automatic habits for handling syntax and grammatic inflections. In this test the conceptual difficulty is low, but the task elicits the child's ability to respond automatically to often repeated verbal expressions of standard American speech. The child comes to expect or predict the grammatic form so that when part of an expression is presented he closes the gap by supplying the missing part. The test measures the form rather than the content of the missing word, since the content is provided by the examiner.

There are thirty-three orally presented items accompanied by pictures which portray the content of the verbal expressions. The pictures are included to avoid contaminating the test with difficulty in the receptive process. Each verbal item consists of a complete statement followed by an incomplete statement to be finished by the child.

Developmental Test of Visual Motor Integration.¹

The long form of this instrument consists of twenty-four geometric forms that are to be copied in a test booklet. These geometric forms are arranged in order of increasing difficulty, and an individual's score is calculated as the number of forms that have been copied successfully prior to three consecutive failures. Educational assessment is the stated purpose for which the test has been designed, with particular emphasis on the preschool group.

A correlation of .89 between scores of this instrument and chronological age is the only validity evidence reported by the author. Reliability evidence is not reported in any systematic way that would be useful to the test user. An internal consistency reliability of .93 was computed for an unknown portion of the standardization population consisting of 594 children of suburban schools. Standardization of the test was accomplished by using a group of 1,039 children from Illinois. Over one-half of the group selected were from suburban schools, while the remainder were selected from schools in urban and rural areas. All the groups of children were considered "average" by school officials.

¹Keith E. Beery and Norman A. Buktenica, Developmental Test of Visual Motor Integration (Chicago: Follett Educational Corporation, 1967).

Boehm Test of Basic Concepts.¹ The purpose of this test is to assess beginning school children's knowledge of widely used basic concepts which are sometimes mistakenly assumed to be familiar to children at the time of entry into kindergarten. The test was inspired by its author's awareness that many children beginning school do not comprehend many of the printed or spoken instructions given by teachers. The test consists of fifty items concerning the child's understanding of space, time, and quantity, and a few miscellaneous concepts selected on the basis of their contribution to the internal consistency and validity of the test.

The standardization sample included 865 children located in five cities scattered across the country. School officials from each city selected one high, one middle, and one low socioeconomic school for the administration of the test. Reliability coefficients ranging from .68 to .90 are reported.

STATISTICAL DESIGN

The study involved three school years and different groups were selected for each year. The first year of the study, the 1973-74 school year, included only an

¹Ann E. Boehm, Boehm Test of Basic Concepts (New York: The Psychological Corporation, 1969).

experimental school-based group. The second year of the study, the 1974-75 school year, included an experimental school-based group and a control group. The last year of the study, the 1975-76 school year, included an experimental school-based group, an experimental home-based group, and a control group. This section is concerned with the statistical techniques used in the analysis of the stated hypotheses for these three years.

For the first year of the study, a sample of children were randomly selected from the original prekindergarten participants to be tested at the end of grade one. This was done in order to investigate the statistical significance of any difference that might have occurred in IQ scores between this posttest and a pretest administered to these children before they started in the program. The Slosson Intelligence Test for Children and Adults was used for the pre- and posttests. The statistical technique used for this comparison involved the use of IQ scores to calculate the standard deviation of the differences, and the standard error of the mean difference. The basic equations used for computation are reported in Downie and Heath.¹

1. The sum of the squares for the difference scores

$$(D): \quad \Sigma d^2 = \Sigma D^2 - \frac{(\Sigma D)^2}{N}$$

¹Downie and Heath, p. 177.

2. The standard deviation of the differences:

$$S_D = \sqrt{\frac{\sum d^2}{N}}$$

3. The standard error of the mean difference:

$$S_{\bar{D}} = \frac{S_D}{\sqrt{N-1}}$$

A t-test for correlated data is usually employed to establish statistical significance between two groups of scores from the same set of subjects. The basic equation used for computation is reported in Downie and Heath.¹

$$t = \frac{\text{mean of difference scores}}{\text{standard error of mean difference}}$$

When data are correlated the t value is interpreted with (n-1) degrees of freedom. It was possible to determine whether the computed t value was greater than the tabled critical value of t found in Downie and Heath under Appendix C (alpha = .05).²

The second year of the study involved a comparison of reading and mathematics achievement at the end of the kindergarten year that may have occurred due to participation in the Early Childhood Program the previous year. The Comprehensive Test of Basic Skills was used as the pre- and

¹Downie and Heath, p. 178.

²Downie and Heath, p. 306.

posttest and was administered to the experimental school-based group and the control group at the beginning and at the end of their kindergarten year. A sample was randomly selected from the experimental group approximately equal in size to that of the existing control group in order to investigate any statistical significance in the change scores. A t-test for the difference between mean change scores of independent samples is usually employed when two groups of scores are considered uncorrelated or independent. The basic equations used for computation are reported in Downie and Heath.¹

1. The sum of the squares for each distribution:

$$\Sigma x^2 = \Sigma X^2 - \frac{(\Sigma X)^2}{N}$$

2. The standard error for the difference between means of small samples:

$$S_{D\bar{X}} = \sqrt{\frac{\Sigma x_1^2 + \Sigma x_2^2}{N_1 + N_2 - 2} \left(\frac{1}{N_1} + \frac{1}{N_2} \right)}$$

3. The t ratio:

$$t = \frac{\bar{X}_1 - \bar{X}_2}{S_{D\bar{X}}}$$

When data are uncorrelated or independent, the t value is interpreted with $(N_1 + N_2 - 2)$ degrees of freedom. Appendix C in Downie and Heath was then investigated as to

¹Downie and Heath, pp. 171-172.

whether the computed t-value was greater than the tabled critical value ($\alpha = .05$).¹

The second year of the study also included an investigation of the status of the two groups in reading readiness to determine if a statistical difference occurred due to participation in the Early Childhood Program. This investigation was done by two methods, both utilizing raw scores from the Metropolitan Readiness Test administered to both groups at the end of their kindergarten year. To investigate the stated hypothesis, a t-test for a difference between means of independent samples was employed. A second technique, employed to compare readiness scores between the two groups, was to equate the two groups by pairing IQ scores of children from each group. The Slosson Intelligence Test administered to these children at the beginning of their prekindergarten year provided the IQ scores. A t-test for correlated data was then used to analyze the readiness scores.

For the third year of the study, the two experimental groups and the control group were administered the Slosson Intelligence Test for Children and Adults, the Illinois Test of Psycholinguistic Abilities: Grammatical Closure Subtest, and the Developmental Test of Visual Motor Integration at the beginning and at the end of the early childhood year.

¹Downie and Heath, p. 306.

These instruments were used respectively to investigate measured intelligence, visual motor skills, and use of language. The pretest scores were used to equate the three groups through a discard process. Through this process the two experimental groups were equated until they were equal in size and until each had a standard deviation and a mean equal to that of the control group. This was done for each of the three pretests. The posttest scores for the resulting three groups were then used in the analysis of the data. To investigate any statistical differences occurring due to participation in the program, either at school or at home, or to no preschool participation, the technique of analysis of variance was employed.

The third year of the study also included an investigation of growth in concept development, comparing the two experimental groups. These children were administered the Boehm Test of Basic Concepts at the beginning and at the end of the prekindergarten year. The pretest was used to equate the two groups by matching pairs of subjects until each group had equal standard deviations and equal means. The posttest scores were then used in the analysis. The statistical technique employed was a t-test for the mean difference in correlated samples.

The analysis of variance provides an efficient method for determining:

1. The significance of the differences between means of two or more groups on one or more classifications.
2. The differential effects of membership in specific groups on one classification and simultaneous membership in specific groups on another classification.

The following formulas are necessary to execute the analysis of variance technique as presented by Downie and Heath.¹

1. The total sum of the squares:

$$\Sigma x_T^2 = \Sigma X^2 - \frac{(\Sigma X)^2}{N}$$

2. The between sum of squares:

$$\Sigma x_b^2 = \Sigma (\bar{X} - \bar{X}_T)^2 n$$

3. The within sum of the squares:

$$\Sigma x_w^2 = \Sigma x_T^2 - \Sigma x_b^2$$

4. The mean-square between groups:

$$\text{Mean-square} = \frac{\text{Between sum of squares}}{\text{df Between groups}}$$

¹Downie and Heath, pp. 208-210.

5. The mean-square within groups:

$$\text{Mean-square} = \frac{\text{Within sum of squares}}{\text{df Within groups}}$$

The basic equation is given by Downie and Heath from which all analysis of variance computations were derived.¹

$$F_1 = \frac{\text{Mean-square between groups}}{\text{Mean-square within groups}}$$

Having obtained an F_1 value, it was interpreted for statistical significance in order to retain or reject the null hypotheses from the third year of the study. It was possible to determine whether the computed F_1 value was significantly greater than the tabled critical value found in Appendix E (Alpha = .05), Downie and Heath.²

The statistical technique used to make pair comparisons of means after the F had been found to be significant was the Scheffe' Test.³ To locate the significant differences, this statistical procedure analyzes each possible pair of means to determine if the two means are significantly different from one another. For each pair of means the following formula was executed.

¹Downie and Heath, p. 211.

²Downie and Heath, pp. 308-313.

³Downie and Heath, pp. 211-213.

$$F_2 = \frac{(\bar{X}_1 - \bar{X}_2)^2}{S_w^2 (N_1 + N_2) / N_1 N_2}$$

The F_2 value, if significant, is then multiplied by $(K-1)$, where K is the number of groups or treatments. Each computed F_2 value is then compared to the computed product value of $F_1 (K-1)$. If any of these F_2 values are larger than this computed product, then it follows that the two means used in the computation of the F_1 value are significantly different from each other ($\text{Alpha} = .05$).

In developing a rationale for the treatment of the data and the rejection or failure of rejection of the hypotheses, an attempt was made to eliminate bias as much as possible. Control was generally limited to when the observations or measurements were made and when the treatment or independent variable was to be applied. The selection process did not allow for control over which group or individual subjects were to receive the treatment.

The research design for the first year of the study was limited by several factors. A first factor of limitation was due to the use of the pretest score as one of the criteria for selection of children into the Early Childhood Program. Such a procedure not only sensitized the subjects to the treatment but may have induced statistical regression. Since the pupils were selected on low or extreme scores (below the fortieth percentile) and used in this

one-group pretest-posttest design, the posttest scores had, on the average, a greater probability of shifting toward the mean of the distribution.

A second factor of limitation was the effect of history or the length of time between the administration of the pre- and posttesting. The time span of nearly three years between tests may have allowed other events, beside the treatment effect, to occur in and out of the experimental setting, which may have had an effect on the dependent variable. Biological and psychological maturation over this long period of time may have become an extraneous source of differences in addition to the treatment and, therefore, must be considered as a possible limitation.

The research process for the second year included a static-group comparison type of design and a nonequivalent control group design. The static-group comparison type of design, which involved a readiness test given to both the experimental and control groups at the end of their kindergarten year, was limited due to the selection technique used in the study. It was not possible for the subjects to be randomly assigned to either the treatment or control groups. The two-year time span involved between the beginning of the prekindergarten treatment and the date of the readiness test also limited the study because of the possible effects of history and maturation.

The nonequivalent control group design was also

limited because of selection bias. This design included a pre- and posttest administered to the two groups at the beginning and at the end of their kindergarten year. Although both groups were measured twice, the selection process did not allow the subjects to be randomly assigned to either group. Statistical regression was also a limiting factor because of the eligibility criteria used in program selection.

The research process for the third year of the study was a multiple nonequivalent control group type of design. This design was limited due to the selection process, similar to that of the second year of the study, and regression. Statistical regression may have occurred since two of the four pretest scores used for evaluation measurement, visual-motor skills and use of language, were also used for program selection as well as in the analysis of the data.

CHAPTER SUMMARY

This chapter was concerned with information relative to the rationale of the study and the procedures involved in this investigation.

The purpose of the study was to ascertain whether there were statistically significant differences in growth and status factors of culturally deprived children of a similar background who had or had not participated in a formal early childhood program. The study involved three

different types of groups and covered a three-year period. The three groups were composed of:

1. Culturally deprived prekindergarten children who had participated in a school-based early childhood program.
2. Culturally deprived prekindergarten children who had participated in a home-based early childhood program.
3. Culturally deprived prekindergarten children who had not participated in any early childhood program.

The first year of the study involved only an experimental school-based group whereas the second year included a comparison of an experimental school-based group with a control group. The third year of the study compared the growth of an experimental school-based group, a control group, plus an experimental home-based group.

The selection and utilization of the instruments used in testing the hypotheses, the selection of the establishment of the three groups, and the selection of the statistical techniques to be employed were dealt with in detail.

Chapter 4

ANALYSIS OF DATA

The purpose of this chapter is to present a statistical analysis of the data and indicate the degree to which the hypotheses are found to be supported.

The study was designed to examine a formal pre-kindergarten education program by comparing growth and status factors of culturally deprived children who had participated in an early childhood program with children of similar backgrounds who had not participated in such a program. Areas of concern were reading readiness, language usage, visual motor skills, basic concept formation, reading and mathematics achievement, and measured intelligence. The study involved three different types of groups and covered a three-year period. The first year of the study involved only an experimental school-based group whereas the second year included a comparison of an experimental school-based group with a control group. The third year of the study compared growth factors among an experimental school-based group, a control group, and an experimental home-based group.

The analyses are presented in three sections. The first section concerns an experimental school-based group from the 1973-74 Early Childhood Program and presents a

comparison of IQ scores taken at the beginning of their pre-kindergarten year with IQ scores taken after they had completed grade one. The Slosson Intelligence Test was used as the pre- and posttest.

The second section is devoted to a comparison of certain growth factors between an experimental school-based group and a control group of the 1974-75 Early Childhood Program. The analysis included raw scores in reading and mathematics achievement as measured by the Comprehensive Test of Basic Skills and raw scores earned by the subjects in reading readiness as measured by the Metropolitan Readiness Test.

The third section compares growth factors among an experimental school-based group, a control group, and an experimental home-based group from the 1975-76 Early Childhood Program. These three groups were compared concerning intelligence based on IQ scores as measured by the Slosson Intelligence Test, visual motor skills based on age equivalent scores as measured by the Developmental Test of Visual Motor Integration, and language usage based on raw scores as measured by the Illinois Test of Psycholinguistic Abilities: Grammatical Closure Subtest. A comparison was also made between the two experimental groups in concept formation based on raw scores as measured by the Boehm Test of Basic Concepts.

1973-74 EARLY CHILDHOOD PROGRAM

IQ scores from an experimental school-based group of the 1973-74 Early Childhood Program were taken at the beginning of the 1973-74 school year and were compared with the IQ scores of these same children after they had completed grade one. A sample of children were randomly selected from the original group to be tested at the end of grade one.

Table 3 presents the source table of the t-test for correlated groups which was used in analyzing the data from the two sets of IQ scores. The Slosson Intelligence Test was used as the measuring instrument in order to test the following null hypothesis:

There will be no change in measured intelligence of culturally deprived prekindergarten children between the time of beginning one year's participation in an early childhood program and at the end of grade one.

TABLE 3

t-TEST FOR CHANGE IN INTELLIGENCE TEST SCORES OVER A
THREE YEAR PERIOD (POSTTEST MINUS PRETEST)
(1973-74 PREKINDERGARTEN GROUP)

Score Groups	Mean	Mean Difference	Standard Deviation Difference	Degrees of Freedom	t	
Pretest	105.2	2.7	11.5	21	1.089	ns
Posttest	107.9					

The computed t-value yielded 1.089 regarding a change in measured intelligence. Rejection of the null hypothesis at the .05 level with 21 degrees of freedom would require a t ratio greater than 2.080. The null hypothesis was not rejected as the result was nonsignificant.

1974-1975 EARLY CHILDHOOD PROGRAM

Three hypotheses were investigated concerning an experimental school-based group and a control group in the 1974-75 Early Childhood Program. A sample of children approximately equal in Number to that of the existing control group was randomly selected as the experimental school-based group.

Table 4 presents the source table of the t-test for the difference between mean change scores of independent samples for growth in reading. Achievement was determined by differences in the raw scores of tests given at the beginning and at the end of the kindergarten year. The Comprehensive Test of Basic Skills was used as the measuring instrument in order to test the following null hypothesis:

There will be no differences in reading achievement change following one year of kindergarten between culturally deprived children who participated for one year in an early childhood program and culturally deprived children who were not participants in such a program.

The computed t-value yielded 0.555 regarding the effect of prekindergarten treatment on reading scores by

comparing the change scores of the two groups. Rejection of the null hypothesis at the .05 level with 45 degrees of freedom would require a t ratio greater than 2.021. The null hypothesis was not rejected as the result was nonsignificant.

TABLE 4

t-TEST OF READING ACHIEVEMENT SCORES FOR
EXPERIMENTAL AND CONTROL GROUPS
(1974-75 SCHOOL YEAR)

Group	N	Mean	Standard Deviation	Degrees of Freedom	t	
Experimental	26	28.8	7.6	45	0.555	ns
Control	21	27.2	11.6			

Table 5 presents the source table of the t -test for the difference between mean change scores of independent samples for growth in mathematics. Achievement was determined by differences in the raw scores of tests given at the beginning and at the end of the kindergarten year. The Comprehensive Test of Basic Skills was used as the measuring instrument in order to test the following null hypothesis:

There will be no differences in mathematics achievement change following one year of kindergarten between culturally deprived children who participated for one year in an early childhood program and culturally deprived children who were not participants in such a program.

TABLE 5

t-TEST OF MATHEMATICS ACHIEVEMENT SCORES FOR
EXPERIMENTAL AND CONTROL GROUPS
(1974-75 SCHOOL YEAR)

Group	N	Mean	Standard Deviation	Degrees of Freedom	t	
Experimental	26	4.85	3.12	45	1.451	ns
Control	21	3.24	3.94			

The computed t-value yielded 1.451 regarding the effect of prekindergarten treatment on mathematics scores by comparing the change scores of the two groups. Rejection of the null hypothesis at the .05 level with 45 degrees of freedom would require a t ratio greater than 2.021. The null hypothesis was not rejected as the result was nonsignificant.

Table 6 presents the source table of the t-test for a difference between means of independent samples used in determining status of the two groups in reading readiness. Raw scores from the Metropolitan Readiness Test given at the end of the kindergarten year were used to test the following null hypothesis:

There will be no difference in reading readiness status following one year of kindergarten between culturally deprived children who participated for one year in an early childhood program and culturally deprived children who were not participants in such a program.

TABLE 6

t-TEST OF READING READINESS SCORES FOR
EXPERIMENTAL AND CONTROL GROUPS
(1974-75 SCHOOL YEAR)

Group	N	Mean	Standard Deviation	Degrees of Freedom	t	
Experimental	26	66.5	11.5	45	0.378	ns
Control	21	65.2	10.8			

The computed t-value yielded 0.378 regarding reading readiness status of the two groups. Rejection of the null hypothesis at the .05 level with 45 degrees of freedom would require a t ratio greater than 2.021. The null hypothesis was not rejected as the result was nonsignificant.

This null hypothesis was also checked by analyzing the within-ability-level status on reading readiness. Ability level was determined by comparing readiness scores between the two groups while equating out the measured IQ. Table 7 presents the source table of the t-test for correlated data used in determining the status of the two groups.

The computed t-value yielded 1.164 regarding reading readiness status of the two groups. Rejection of the null hypothesis at the .05 level with 10 degrees of freedom would require a t ratio of 2.228. The null hypothesis was not rejected as the result was nonsignificant.

TABLE 7

t-TEST OF DIFFERENCES BETWEEN MATCHED PAIRS (EXPERIMENTAL
MINUS CONTROL) ON READING READINESS SCORES AFTER
ONE YEAR OF KINDERGARTEN
(1974-75 SCHOOL YEAR)

Group	Mean	Mean Difference	Standard Deviation Difference	Degrees of Freedom	t
Experimental	69.9				
Control	66.7	3.2	9.06	10	1.164 ns

1975-1976 EARLY CHILDHOOD PROGRAM

Three hypotheses were investigated concerning an experimental school-based group, an experimental home-based group, and a control group in the 1975-76 Early Childhood Program. Testing for each of the three hypotheses included a pretest given at the start of the prekindergarten year and a posttest given upon completion of the prekindergarten year. Means and standard deviations were used to equate as closely as possible the three groups by using pretest scores in each of three comparison areas. A discard process was used to form the final comparison groups.

Table 8 presents the source table of the analysis of variance of IQ scores by group. It also shows the results of the Scheffe' Test for pair comparisons used to locate the significant differences. The Slosson Intelligence Test was

TABLE 8

ANALYSIS OF VARIANCE OF INTELLIGENCE TEST SCORES FOR TWO
EXPERIMENTAL GROUPS AND ONE CONTROL GROUP
(1975-76 SCHOOL YEAR)

Source of Variation	Sum of Squares	Degrees of Freedom	Mean Square	F
Between	1174.09	2	587.05	3.251*
Within	6862.69	38	180.60	
Totals	8036.78	40		

*Significant at the .05 level

SCHEFFE' TEST FOR DIFFERENCES OF GROUP MEANS

Groups	Means	F-Values	
C minus A	110.7 - 124.9	6.50*	
C minus B	110.7 - 120.1	2.82	ns
B minus A	120.1 - 124.9	1.02	ns

*Significant at the .05 level ($F \geq 6.50$)

"A" represents the experimental school-based group.
"B" represents the experimental home-based group.
"C" represents the control group.

used as the measuring instrument in order to test the following null hypothesis:

There will be no differences in measured intelligence scores among culturally deprived children who participated for one year in a school-based program, culturally deprived children who participated for one year in a home-based program, and culturally deprived children who had not participated in either program.

The computed F-value yielded 3.251 regarding a comparison of measured intelligence among the three groups. Rejection of the null hypothesis at the .05 level with 2 and 38 degrees of freedom would require an F ratio of 3.25. The effect of the analysis was a statistically significant F-value which resulted in a rejection of the null hypothesis.

The pair comparison yielded a statistically significant F-value of 6.50, indicating that the performance of the experimental school-based group surpassed that of the control group. There were no significant differences in the other two comparisons.

Table 9 presents the source table of the analysis of variance of age equivalent scores by group. The Developmental Test of Visual Motor Integration was the instrument used to measure visual motor skills in order to test the following null hypothesis:

There will be no differences in measured scores of visual motor skills among culturally deprived children who participated for one year in a school-based program, culturally deprived children who participated for one year in a home-based program, and culturally deprived children who had not participated in either program.

TABLE 9

ANALYSIS OF VARIANCE OF SCORES IN VISUAL MOTOR SKILLS
FOR TWO EXPERIMENTAL GROUPS AND ONE CONTROL GROUP
(1975-76 SCHOOL YEAR)

Source of Variation	Sum of Squares	Degrees of Freedom	Mean Square	F
Between	119.68	2	59.84	0.625 ns
Within	2871.83	30	95.73	
Totals	2991.51	32		

The computed F-value yielded 0.625 regarding a comparison of visual motor skills among the three groups. Rejection of the null hypothesis at the .05 level with 2 and 30 degrees of freedom would require an F ratio greater than 3.32. The null hypothesis was not rejected as the result was nonsignificant.

Table 10 presents the source table of the analysis of variance of raw scores in language usage by group. It also shows the result of the Scheffe' Test for pair comparisons used to locate the significant differences. The Illinois Test of Psycholinguistic Abilities: Grammatical Closure Subtest was used as the measuring instrument in order to test the following null hypothesis:

There will be no differences in measured scores in use of language among culturally deprived children who participated for one year in a school-based program, culturally deprived children who

TABLE 10

ANALYSIS OF VARIANCE OF SCORES IN LANGUAGE USAGE FOR TWO
EXPERIMENTAL GROUPS AND ONE CONTROL GROUP
(1975-76 SCHOOL YEAR)

Source of Variation	Sum of Squares	Degrees of Freedom	Mean Square	F
Between	103.61	2	51.805	4.932*
Within	399.17	38	10.504	
Totals	502.78	40		

*Significant at the .05 level

SCHEFFE' TEST FOR DIFFERENCES OF GROUP MEANS

Groups	Means	F-Values
C minus A	13.4 - 16.9	6.720*
C minus B	13.4 - 13.8	0.055 ns
B minus A	13.8 - 16.9	7.322*

*Significant at the .05 level ($F \geq + 6.50$)

"A" represents the experimental school-based group.
"B" represents the experimental home-based group.
"C" represents the control group.

participated for one year in a home-based program, and culturally deprived children who had not participated in either program.

The computed F-value yielded 4.932 regarding a comparison of measured scores in language usage among the three groups. Rejection of the null hypothesis at the .05 level with 2 and 38 degrees of freedom would require an F ratio greater than 3.25. The effect of the analysis was a statistically significant F-value which resulted in a rejection of the null hypothesis.

The pair comparison yielded statistically significant F-values of 6.720, favoring the performance of the experimental school-based group over that of the control group, and 7.322, indicating the performance of the experimental school-based group surpassed that of the experimental home-based group. There was no significant difference found between the experimental home-based group mean and the mean of the control group.

A fourth hypothesis for this school year was investigated concerning the experimental school-based group and the experimental home-based group. The area of comparison was concept formation. By utilizing raw scores from the pretest, subjects from each group were selected and matched in order to equate the two groups.

Table 11 presents the source table of the t-test for correlated groups which was used in analyzing the data from the two sets of scores in concept formation. The Boehm Test

of Basic Concepts was used as the measuring instrument in order to test the following null hypothesis:

There will be no difference in measured scores of concept formation among culturally deprived children who participated for one year in a school-based program and culturally deprived children who participated for one year in a home-based program.

TABLE 11

t-TEST OF DIFFERENCES BETWEEN MATCHED PAIRS (SCHOOL-BASED MINUS HOME-BASED) ON CONCEPT FORMATION SCORES (1975-76 SCHOOL YEAR)

Group	Mean	Mean Difference	Standard Deviation Difference	Degrees of Freedom	t
Experimental School-Based	38.4				
		3.1	4.69	19	2.838*
Experimental Home-based	35.3				

*Significant at the .05 level.

The computed t-value yielded 2.838 regarding the effect of prekindergarten treatment on raw scores in basic concepts for the two groups. Rejection of the null hypothesis at the .05 level with 19 degrees of freedom would require a t ratio greater than 2.093. The effect of the analysis was a statistically significant t-value which resulted in a rejection of the null hypothesis. In this case, the performance of the experimental school-based group surpassed that of the experimental home-based group.

CHAPTER SUMMARY

This chapter has presented the statistical results from the treatment of the data. An experimental school-based group from the 1973-74 Early Childhood Program was tested at the beginning of their prekindergarten year and after they had completed grade one. A t-test for correlated data was employed in order to compare change in measured intelligence. The result of the analysis was nonsignificant and the null hypothesis was not rejected.

Three hypotheses were investigated concerning an experimental home-based group and a control group in the 1974-75 Early Childhood Program. Using scores taken at the beginning and at the end of the kindergarten year, a t-test for the difference between mean change scores of independent samples was employed to check null hypotheses regarding reading achievement and mathematics achievement. In each case, the effect of the analysis was nonsignificant and the null hypothesis was not rejected.

The third hypothesis for this school year concerned the status of the two groups in reading readiness. Such status was determined by using raw scores on a readiness test given at the end of the kindergarten year. Using a t-test for a difference between means of independent samples resulted in a nonsignificant t-value and the null hypothesis was not rejected. This hypothesis was also

checked by analyzing the within-ability-level status on reading readiness. Ability level was determined by comparing readiness scores between the two groups while equating out the measured IQ. A t-test for correlated data resulted in a nonsignificant t-value and the null hypothesis was not rejected.

Three hypotheses were investigated concerning an experimental school-based group, an experimental home-based group, and a control group in the 1975-76 Early Childhood Program. Testing for each of the three hypotheses included a pretest given at the start of the prekindergarten year and a posttest given upon completion of the prekindergarten year. An analysis of variance technique was used to compare measured intelligence, visual motor skills, and language usage among the three groups. The effect of the analysis regarding measured intelligence was a statistically significant F-value which resulted in a rejection of the null hypothesis. The pair comparison technique indicated that the performance of the experimental school-based group surpassed that of the control group. There were no significant differences in the other two group comparisons regarding measured intelligence.

Concerning visual motor skills, the result of the analysis was nonsignificant. The null hypothesis was not rejected since there was no significant difference in measured performance among the three groups.

The effect of the analysis regarding language usage among the three groups resulted in a significant F-value and the null hypothesis was rejected. The multiple comparison technique showed two significant F-values. The first value indicated the performance of the experimental school-based group surpassed that of the control group, whereas the second value favored the performance of the experimental school-based group over that of the experimental home-based group. There was a nonsignificant F-value in the other group comparison regarding language usage.

A fourth hypothesis for this school year was investigated concerning the experimental school-based group and the experimental home-based group. The area of comparison was concept formation. To equate the two groups, subjects were matched by utilizing raw scores from the pretest. A t-test for correlated data was the statistical technique employed. The effect of the analysis was a statistically significant t-value which resulted in a rejection of the null hypothesis, favoring the performance of the experimental school-based group over that of the experimental home-based group.

Chapter 5

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

The purpose of the study was to examine a formal prekindergarten educational program by comparing growth and status factors of culturally deprived children who had participated in an early childhood program with children of similar backgrounds who had not participated in such a program. Areas of concern were measured intelligence, reading readiness, language usage, visual motor skills, reading and mathematics achievement, and concept formation. All subjects participating in the study resided in a mid-western school system during the period beginning with the school year 1973-74 and ending with the school year 1975-76.

PROCEDURES

Subjects were identified for the study by meeting specific eligibility criteria of the regulations as set down by Title I, E.S.E.A. legislation and who resided in one of five elementary schools designated as project area centers. During the first project year, 1973-74, an experimental school-based group was established. The IQ scores as measured by the Slosson Intelligence Test were taken at the beginning of the 1973-74 school year and were compared with the IQ scores of these same children after they had completed grade one. A sample of children were randomly

selected from the original group to be tested at the end of grade one. A t-test for correlated groups was used in analyzing the data from the two sets of IQ scores for this sample of children.

During the second project year, 1974-75, an experimental school-based group and a control group were established in order to investigate three hypotheses. A sample of children approximately equal in number to that of the existing control group was randomly selected as the experimental school-based group. The first two hypotheses dealt with basic skill achievement in reading and mathematics as measured by the Comprehensive Test of Basic Skills. Growth was determined by differences in raw scores from tests given at the beginning and at the end of the kindergarten year. To check these hypotheses a t-test for the difference between mean change scores of independent samples was used.

A third hypothesis concerned the status of the two groups in reading readiness as measured by the Metropolitan Readiness Test. Such status was determined by using raw scores on a readiness test given at the end of the kindergarten year. To check this stated hypothesis a t-test for a difference between means of independent samples was used. This hypothesis was also checked by analyzing the within-ability-level status on reading readiness. Ability level was determined by comparing readiness scores between the two groups while equating out the measured IQ. A t-test for

correlated groups was used in analyzing the data from the two sets of readiness scores for this sample of children.

During the third year of the study, 1975-76, an experimental school-based group, an experimental home-based group, and a control group were established in order to investigate hypotheses concerning intelligence as measured by the Slosson Intelligence Test, visual motor skills as measured by the Developmental Test of Visual Motor Integration, and language usage as measured by the Illinois Test of Psycholinguistic Abilities: Grammatic Closure Subtest. Testing for each of the three hypotheses included a pretest given at the start of the prekindergarten year and a posttest given upon completion of the prekindergarten year. The pretest scores from these instruments were used to equate the three groups through a discard process. The analysis of variance technique was employed to check these hypotheses.

A fourth hypothesis was investigated concerning the experimental school-based group and the experimental home-based group. The area of comparison was concept formation and raw scores, as measured by the Boehm Test of Basic Concepts, were used in the analysis. By utilizing raw scores from the pretest, subjects were selected and matched pairs assigned in order to equate the two groups. A t-test for the mean difference in correlated samples was the statistical technique used to check the stated hypothesis.

FINDINGS

A t-test for correlated data was applied to the difference between two groups of scores taken from the experimental school-based group of the 1973-74 Early Childhood Program in order to test the following hypothesis:

There will be no change in measured intelligence of culturally deprived prekindergarten children between the time of beginning one year's participation in an early childhood program and at the end of grade one.

The analysis indicated no significant difference in measured intelligence.

A t-test for the difference between mean change scores of independent samples was applied in order to test three hypotheses concerning the experimental school-based group and the control group from the 1974-75 Early Childhood Program. They were as follows:

There will be no differences in reading achievement change following one year of kindergarten between culturally deprived children who participated for one year in an early childhood program and culturally deprived children who were not participants in such a program.

There will be no differences in mathematics achievement change following one year of kindergarten between culturally deprived children who participated for one year in an early childhood program and culturally deprived children who were not participants in such a program.

There will be no difference in reading readiness status following one year of kindergarten between culturally deprived children who participated for one year in an early childhood program and culturally deprived children who were not participants in such a program.

The analysis indicated no significant differences in changes in reading achievement and mathematics achievement nor in reading readiness status.

The third hypothesis for the 1974-75 school year was also checked by analyzing the within-ability-level status on reading readiness. After equating the two groups, a t-test for correlated data was used in determining the status of the two groups. The analysis indicated no significant differences in reading readiness status.

An analysis of variance technique used to compare group mean scores was applied in order to test three hypotheses concerning the experimental school-based group, the control group, and the experimental home-based group from the 1975-76 Early Childhood Program. They were as follows:

There will be no differences in measured intelligence scores among culturally deprived children who participated for one year in a school-based program, culturally deprived children who participated for one year in a home-based program, and culturally deprived children who had not participated in either program.

There will be no differences in measured scores of visual motor skills among culturally deprived children who participated for one year in a school-based program, culturally deprived children who participated for one year in a home-based program, and culturally deprived children who had not participated in either program.

There will be no differences in measured scores in use of language among culturally deprived children who participated for one year in a school-based program, culturally deprived children who participated for one year in a home-based program, and culturally deprived children who had not participated in either program.

The analysis regarding measured intelligence scores showed a significant difference and the null hypothesis was rejected. The pair comparison resulted in a significant F-value, indicating that the performance of the experimental school-based group surpassed that of the control group. There were no significant differences in the other two group comparisons.

The analysis regarding a comparison of visual motor skills indicated no significant differences among the three groups. The result was a failure to reject the null hypothesis.

The analysis indicated a significant difference regarding a comparison of measured scores in language usage among the three groups and the null hypothesis was rejected. The pair comparisons showed two significant F-values. The first indicated the performance of the experimental school-based group surpassed that of the control group, whereas the second favored the performance of the experimental school-based group over that of the experimental home-based group. There was no significant difference found between the other two groups.

A fourth hypothesis for the 1975-76 school year was investigated concerning concept formation. After equating the two groups, a t-test for correlated data was applied to the difference between two groups of scores taken from the experimental school-based group and the experimental

home-based group. The following hypothesis was tested:

There will be no difference in measured scores of concept formation among culturally deprived children who participated for one year in a school-based program and culturally deprived children who participated for one year in a home-based program.

In comparing the mean difference on raw scores in concept formation, the analysis indicated a significant difference and the null hypothesis was rejected. In this case, the performance of the experimental school-based group surpassed that of the experimental home-based group.

CONCLUSIONS

The study was based upon the premise that a formal prekindergarten program designed for culturally deprived children can reduce certain cognitive and motivational deficits characteristic of these children and which predisposes them to early and cumulative school failure. It was desired that such a program would provide experiences in order to ensure success in later educational experiences.

The major purpose of the study was to determine the effect of a formal prekindergarten educational experience on the growth and status of culturally deprived children. The data were categorized according to the particular year of the prekindergarten experience and to the type of group or groups used in the analysis. An evaluation of the results of the study should be made with the purposes of the study in mind.

Conclusions that can be drawn from the results of the study are as follows:

1. Children who attend a school-based prekindergarten educational program benefit more in measured intelligence and language usage than do children who do not participate in any prekindergarten program when these areas of concern are measured at the end of the prekindergarten year.

2. Children who attend a school-based prekindergarten program do not benefit in visual motor skills over children who do not participate in any prekindergarten program when this area of concern is measured at the end of the prekindergarten year.

3. Children who attend a school-based prekindergarten educational program benefit more in language usage and concept formation than do children who participate in a home-based prekindergarten educational program when these areas of concern are measured at the end of the prekindergarten year.

4. Children who attend a school-based prekindergarten educational program do not benefit more in measured intelligence or visual motor skills than do children who participate in a home-based prekindergarten educational program when these areas of concern are measured at the end of the prekindergarten year.

5. Children who attend a prekindergarten educational program do not show significantly greater growth in reading

achievement or mathematics achievement nor in reading readiness status than children who do not participate in any prekindergarten educational program by the time they reach the end of their kindergarten year.

6. Children who attend a prekindergarten educational program do not show a change in measured intelligence from the beginning of the prekindergarten year to the end of first grade.

7. To summarize, prekindergarten programs such as the one evaluated in this study are only marginally effective in helping culturally disadvantaged children develop school-related skills, and even then only if the program is school-based.

RECOMMENDATIONS

The conclusions of the study have implications for school personnel who are, or will be administering a prekindergarten program. The following recommendations are derived from these implications.

1. If a school district is considering the implementation of a prekindergarten program, it would appear that the school-based approach is the most effective.

2. If a school district, because of monetary, staff, housing, or other reasons, is considering the implementation of a prekindergarten program using the home-based approach, an attempt must be made to determine what educational

activities are most appropriate for this approach in order to best meet predetermined objectives.

3. The process of implementing a prekindergarten program should be based on a defined educational plan. This plan could include the following steps: a total needs assessment procedure which identifies the objectives of the program and the type of child to be served by the program; a complete diagnostic process which identifies the individual cognitive and affective deficiencies of each child relative to the program objectives; a prescriptive instructional strategy which will provide each child with a variety of experiences designed to overcome, modify, or help alleviate those deficiencies; and a systematic evaluation procedure which examines the value of the program in terms of the stated objectives.

4. An evaluation similar to the one carried out in this study should be utilized by all school districts operating prekindergarten programs in appraising the effectiveness of those programs. However, more intensive evaluation procedures need to be devised to determine what is or is not an effective program.

5. Future studies of prekindergarten programs should consider the measurement of human characteristics other than those of the cognitive area. Such characteristics could include attitude, dependability, sociability, emotional growth, and physical growth, and could be measured at ages

in addition to the prekindergarten age.

6. Future studies might also be made of programs and organizational patterns that should be utilized in the primary grades to promote the types of skills that early childhood programs had hopefully begun.

BIBLIOGRAPHY

BIBLIOGRAPHY

A. BOOKS

- Bloom, Benjamin S. Stability and Change in Human Characteristics. New York: John Wiley and Sons, 1964.
- Bond, Guy L., and Miles A. Tinker. Reading Difficulties--Their Diagnosis and Correction. New York: Appleton-Century-Crofts, Inc., 1957.
- Downie, N. M., and R. W. Heath. Basic Statistical Methods. New York: Harper and Row, Inc., 1974.
- Dunn, Lloyd M., and others. Peabody Early Experiences Kit, Part I. Circle Pines, Minnesota: American Guidance Service, 1976.
- Evans, Ellis D. Contemporary Influences in Early Childhood Education. New York: Holt, Rinehart and Winston, 1975.
- Frost, Joe L., and G. R. Hawkes. The Disadvantaged Child. Boston: Houghton-Mifflin, 1970.
- Gordon, Ira J., ed. Early Childhood Education; The Seventy-First Yearbook of the National Society of Education, Part II. Chicago: The University of Chicago Press, 1972.
- Hendrick, Joanne. The Whole Child--New Trends in Early Education. St. Louis: The C. V. Mosby Company, 1975.
- Weber, Evelyn. Early Childhood Education: Perspectives on Change. Worthington, Ohio: Charles A. Jones Publishing Company, 1970.

B. PERIODICALS

- Allen, Sally V. "The Making of State Policy for Children," Childhood Education, LI (May, 1974), 324-326.
- Baratz, Stephen S., and Joan C. Baratz. "Early Childhood Intervention: The Social Science Base of Institutional Racism," Harvard Educational Review, XL (February, 1970), 29-50.

- Blank, Marion, and Francis Solomon. "A Tutorial Program to Develop Abstract Thinking in Socially Disadvantaged Preschool Children," Child Development, IXL (June, 1968), 379-389.
- Boehm, Ann E. "Out of the Classroom: One Model for Developing a Prekindergarten Assessment Program," Exceptional Children, XXXVII (March, 1971), 523-527.
- Branche, Christine F. "Children Fit No Model: Program Considerations for Early Childhood Education in Urban Areas," National Elementary Principal, LI (September, 1971), 110-115.
- Butler, Annie L. "Areas of Recent Research in Early Childhood Education," Childhood Education, XLVIII (December, 1971), 143-147.
- _____. "Early Childhood Education: A Perspective on Basics," Childhood Education, L (October, 1973), 21-25.
- Elkind, David. "Early Childhood Education: A Piagetian Perspective," National Elementary Principal, LI (September, 1971), 48-55.
- _____, and Nancy Lyke. "Early Education and Kindergarten: Competition or Cooperation?," Young Children, XXX (September, 1975), 393-399.
- Feeney, Stephanie. "Child-Care Debate: Key Questions," Compact (July/August, 1973), 25-26.
- Fowler, William. "On the Value of Both Play and Structure in Early Education," Young Children, XXVII (October, 1971), 24-36.
- Frost, Joe L. "At Risk," Childhood Education, LII (May, 1975), 299-304.
- Gandia, Gil. "The Piagetian Dilemma," Elementary School Journal, LXXIV (May, 1974), 481-492.
- Gordon, Ira J. "Parent Involvement in Early Childhood Education," National Elementary Principal, LI (September, 1971), 26-30.
- Harned, Barbara J. "The Federal Government and Preschool Education," National Elementary Principal, LI (September, 1971), 92-97.

- Highberger, Ruth, and Sharon Teets. "Early Schooling: Why Not?," Young Children, XXIX (January, 1974), 66-77.
- Houston, Susan H. "A Reexamination of Some Assumptions About the Language of the Disadvantaged Child," Child Development, XLI (December, 1970), 947-963.
- Jones, Elizabeth. "Involving Parents in Children's Learning," Childhood Education, XLVII (December, 1970), 126-130.
- Keniston, Kenneth, "Do Americans Really Like Children," Childhood Education, LII (October, 1975), 4-12.
- Klein, Jenny W. "Head Start: National Focus on Young Children," National Elementary Principal, LI (September, 1971), 98-103.
- Levin, Gerald R., and others. "Measuring Knowledge of Basic Concepts by Disadvantaged Preschoolers," Psychology in the Schools, XII (April, 1975), 132-139.
- Levitt, Edith, and Shirley Cohen. "Educating Parents of Children with Special Needs," Young Children, XXXI (May, 1976), 263-271.
- Liederman, David S. "Why the States Must Take the Lead," Compact (July/August, 1973), 4-5.
- Lucco, Alfred A. "Cognitive Development After Age Five: A Future Factor in the Failure of Early Intervention with the Urban Child," American Journal Orthopsychiatric, XLII (October, 1972), 847-856.
- Margolin, Edythe. "Crucial Issues in Contemporary Early Childhood Education," Childhood Education, XLV (May, 1969), 500-504.
- Meichenbaum, Donald H., and Lorraine Turk. "Implications of Research on Disadvantaged Children and Cognitive-Training Programs for Educational Television: Ways of Improving 'Sesame Street'," Journal of Special Education, VI (Spring, 1972), 27-42.
- Moore, Raymond S. "Let's Keep the Little Kids Home," Compact (November/December, 1973), 22-23.
- _____, and Dennis R. Moore. "How Early Should They Go to School," Childhood Education, L (October, 1973), 14-20.

- Moore, Raymond S., Robert D. Moon, and Dennis R. Moore. "The California Report: Early Schooling for All?," Phi Delta Kappan, LIII (June, 1972), 615-621.
- Neal, Tom. "Organizing the States for Children's Services," Compact (July/August, 1973), 8-9.
- Parnell, Dale. "Upgrading the Downgrader," Compact (July/August, 1973), 22-24.
- Rampton, Calvin L. "A Commitment in Jeopardy?," Compact (July/August, 1973), 3.
- Shane, Harold G. "The 'Domino Effect' of Early Childhood Education on the Elementary School," National Elementary Principal, LI (September, 1971), 31-35.
- Weikart, David P. "Open Framework: Evolution of a Concept in Preschool Education," National Elementary Principal, LI (April, 1972), 59-62.
- White, Burton L. "Preschool: Has it Worked?," Compact (July/August, 1973), 6-7.
- Zigler, Edward. "Myths and Facts: A Guide for Policymakers," Compact (July/August, 1973), 18-21.

C. DISSERTATION ABSTRACTS

- Baker, Wanda Harris. "Effects of Preschool Enrollment and Parent Participation on Academic Growth," Dissertation Abstracts International, XXXII (1971), 3083 A (University of Southern California).
- Fibus, Ronald Eli. "A Comparison of the Social-Emotional and Academic Effects of Three Preschool Programs on Selected Second Grade Pupils," Dissertation Abstracts International, XXXV (1974), 1907 A (University of Pittsburg).
- Lavin, Claire Marie. "The Effect of a Structured Sensory-Motor Training Program on Selected Cognitive and Psycholinguistic Abilities of Preschool Disadvantaged Children," Dissertation Abstracts International, XXXII (1971), 1984 A-1985 A (Fordham University).
- McRae, Helene Williams. "An Investigation of the Elementary School Performance of Day-Care Participants," Dissertation Abstracts International, XXXV (1975), 7112 A (Lehigh University).

Mosley, Beatrice Butler. "The Effects of Language Development Programs on Selected Preschool Children: A Comparative Study," Dissertation Abstracts International, XXXIV (1974), 4933 A (University of Southern Mississippi).

Russell, Walter L. "Effect of Preschool Experience on Performance of Piaget Tasks in First Grade," Dissertation Abstracts International, XXXIV (1973), 3157 A-3158 A (The University of Tennessee).

D. ERIC REPORTS

Almy, Millie. Early Childhood Research: Second Thoughts and Next Steps. U.S., Educational Resources Information Center, ERIC Document ED 071 765, 1972.

Beller, E. Kuno. Impact of Early Education on Disadvantaged Children. U.S., Educational Resources Information Center, ERIC Document ED 069 428, 1972.

Coffman, Alice O., and James M. Dunlap. The Effects of Assessment and Personalized Programming on Subsequent Intellectual Development of Prekindergarten and Kindergarten Children. Final Report of Phase II. U.S., Educational Resources Information Center, ERIC Document ED 023 487, July, 1968.

Colorado Springs School District 11, Colorado. Focus on Preschool Development Problems. Final Evaluation Report, 1971-1972. U.S., Educational Resources Information Center, ERIC Document ED 078 945, 1972.

DiLorenzo, Louis T., and others. Prekindergarten Programs for the Disadvantaged: A Third-Year Report on an Evaluation Study. U.S., Educational Resources Information Center, ERIC Document ED 030 541, December, 1968.

DiLorenzo, Louis T. Prekindergarten Programs for Educationally Disadvantaged Children, Final Report. U.S., Educational Resources Information Center, ERIC Document ED 038 460, December, 1969.

Jacobsen, Leonard I., and Larry E. Greeson. Effects of Systematic Conceptual Learning on the Intellectual Development of Preschool Children from Poverty Backgrounds: A Follow-Up Study. U.S., Educational Resources Information Center, ERIC Document ED 063 771, September, 1972.

Karnes, Merle B. A New Role for Teachers: Involving the Entire Family in the Education of Preschool Disadvantaged Children. U.S., Educational Resources Information Center, ERIC Document ED 036 339, 1969.

Kershner, Keith M. Pennsylvania Preschool and Primary Education Project: 1968-1969 Fiscal Report to the Ford Foundation. U.S., Educational Resources Information Center, ERIC Document ED 033 759, October, 1969.

Lane, Elizabeth M. Early Childhood Education Program, E.S.E.A. Title I, FY 1971. Project Reports, Volume 6, Book 1, 1971. U.S., Educational Resources Information Center, ERIC Document ED 066 222, 1971.

Lysiak, Floy L. Follow-up Research on Children Who Were Enrolled in the Central Cities Early Childhood Program. Final Report. U.S., Educational Resources Information Center, ERIC Document ED 082 828, June, 1973.

Rodman, Joan I. To Evaluate Children's Intellectual Growth and Development in the Southeast Kansas Demonstration Child Development Center, Fort Scott. U.S., Educational Resources Information Center, ERIC Document ED 076 245, February, 1973.

Saginaw Michigan Schools, Michigan. Preschool Program, E.S.E.A. Title I, 1973-74 School Year. Evaluation Report. U.S., Educational Resources Information Center, ERIC Document ED 101 847, July, 1974.

Westinghouse Learning Corporation, New York. The Impact of Head Start: An Evaluation of the Effects of Head Start on Children's Cognitive and Affective Development. U.S., Educational Resources Information Center, ERIC Document ED 036 321, June, 1969.

E. OTHER SOURCES

Berry, Keith E., and Norman A. Buktenica. Developmental Test of Visual Motor Integration. Chicago: Follett Educational Corporation, 1967.

Boehm, Ann E. Boehm Test of Basic Concepts. New York: The Psychological Corporation, 1969.

Butler, Annie L. Current Research in Education: A Compilation and Analysis for Program Planners. A Research Review from the American Association of Elementary-Kindergarten-Nursery Educators. Washington, D.C.: National Education Association, 1970.

Comprehensive Test of Basic Skills. New York: McGraw-Hill Book Company, Inc., 1970.

Education Commission of the States. Early Childhood Development: Alternatives for Program Implementation in the States. A Report of the Education Commission of the States Task Force on Early Childhood Education. Denver: Education Commission of the States, 1971.

Hildreth, Gertrude H., Nellie L. Griffiths, and Mary E. McGauvran. Metropolitan Readiness Test. New York: Harcourt Brace Jovanovich, Inc., 1969.

Kirk, Samuel A., James J. McCarthy, and Winifred D. Kirk. Illinois Test of Psycholinguistic Abilities. Urbana, Illinois: The University of Illinois Press, 1968.

McLure, William P., and Audra May Pence. Early Childhood and Basic Elementary and Secondary Education. A Report of the National Finance Project--Special Study No. 1. Champaign, Illinois: Bureau of Educational Research, College of Education, University of Illinois, 1970.

Slosson, Richard L. Slosson Intelligence Test for Children and Adults. East Aurora, New York: Slosson Educational Publications, 1963.

U.S. Department of Health, Education, and Welfare--Office of Education. Title I of the Elementary and Secondary Education Act of 1965, Public Law 89-10. Regulations for the Financial Assistance to Meet the Special Educational Needs of Educationally Deprived Children. Title 45, Part 116 of the Code of Federal Regulations. Washington: Government Printing Office, 1969.

APPENDIX A

EXCERPTS FROM THE REGULATIONS OF TITLE I OF THE ELEMENTARY
AND SECONDARY EDUCATION ACT OF 1965, PUBLIC LAW 89-10

REGULATIONS FROM TITLE I OF THE ELEMENTARY AND
SECONDARY EDUCATION ACT

The following excerpts were taken from the regulations of the Title I, E.S.E.A. Act of 1965, Public Law 89-10.¹

Section 116.1 -- Definitions

Paragraph (b). "Attendance area" means, in relation to a particular public school, the geographical area in which the children who are normally served by that school reside. An attendance area for an elementary school may not necessarily be coterminous with an attendance area for a secondary school.

Paragraph (i). "Educationally deprived children" means those children who have need for special educational assistance in order that their level of educational attainment may be raised to that appropriate for children of their age. The term includes children who are handicapped or whose needs for such special educational assistance result from poverty, neglect, delinquency, or cultural or linguistic isolation from the community at large.

Paragraph (s). "Low income factor" means the limit of family annual income which is used in determining families with low annual incomes for the purpose of Title I of the Act. For fiscal years 1968, 1969, and 1970, the low-income factor is \$2,000, except that when the appropriations under Title I of the Act are sufficient to satisfy all maximum grants to local educational agencies computed by is \$3,000.²

Paragraph (v). "Project area" means the attendance area, or combination of attendance areas, having a high concentration of children from low-income families which, without regard to the location of the project itself, is designated

¹U.S. Department of Health, Education, and Welfare--Office of Education, Title I of the Elementary and Secondary Education Act of 1965, Public Law 89-10. Regulations for the Financial Assistance to Meet the Special Educational Needs of Educationally Deprived Children. Title 45, Part 116 of the Code of Federal Regulations (Washington: Government Printing Office, 1969).

²Paragraph (s) was amended to read as shown on November 28, 1968, 33 F.R. 17788.

as the area whose children are to be served by the project. The term does not apply to a project to be carried out by a State agency at a school operated or supported by that agency for handicapped children or for children in institutions for neglected or delinquent children.

Section 116.17 -- Project Covered by an Application

Paragraph (a). An application for a grant under Title I of the Act by a local educational agency (other than a State agency directly responsible for providing free public education for handicapped children or for children in institutions for neglected or delinquent children) shall set forth a project for educationally deprived children residing in a project area composed of school attendance areas having high concentrations of children from low-income families or a project for neglected or delinquent children, which project shall have been designed specifically to meet special educational needs of those educationally deprived children. The project itself shall be carried out at locations where the needs of the educationally deprived children can best be served. It may involve the participation of educationally deprived children residing outside the project area if such a participation will not dilute the effectiveness of the project with respect to children residing in the project area.

Paragraph (c). Each application for a grant under Title I of the Act by such a local educational agency, other than an application for a grant for planning, shall designate the project area or the institution or special school for which the project is designed. A project area may include one or more attendance areas having high concentrations of children from low-income families, but the project area must be sufficiently restricted in size in relation to the nature of the project as to avoid jeopardizing its effectiveness in meeting the aims and objectives of the project. Each such application shall describe the special educational needs identified with educationally deprived children residing in the project area at which the project is directed. Each local educational agency shall design its projects in such a manner, and apply them to such school attendance areas having high concentrations of children from low-income families, as will best meet the special educational needs of the educationally deprived children.

Paragraph (f). The project for which an application for a grant is made by a local educational agency should be designed to meet the special educational needs of those educationally deprived children who have the greatest need for assistance. However, none of the educationally deprived

children who are in need of the special educational services to be provided shall be denied the opportunity to participate in the project on the ground that they are not children from low-income families or on the ground that they are not attending school at the time.

Paragraph (g). Each such project must be tailored to contribute particularly toward meeting one or more of the special educational needs of educationally deprived children and should not be designed merely to meet the needs of schools or of the student body at large in a school or in a specified grade in a school.

Section 116.18 -- Size, Scope, and Quality of Projects

Paragraph (a). Each application by a State or local educational agency for a grant (other than one for a planning project) must propose projects of sufficient size, scope and quality as to give reasonable promise of substantial progress toward meeting the needs of educationally deprived children for whom the projects are intended. The program of a local educational agency must involve the expenditure of at least \$2,500 or such lesser amount as may be set by the State educational agency upon its determination that it would be impossible, for such reasons such as distance or difficulty of travel, for the applicant to join effectively with other local educational agencies for the purpose of meeting that dollar requirement. The budget for a project shall avoid imprudent, extravagant or wasteful expenditures which would tend to defeat the intent of the Act to meet the special educational needs of educationally deprived children. The project application must justify any proposed expenditures above the level of expenditures by the applicant for other comparable activities.

Paragraph (b). Each application for a grant (other than one for a planning project) or for payments to the Department of the Interior shall provide an assessment of the special educational needs of the educationally deprived children who would be eligible to receive benefits under Title I of the Act or incorporate by reference the assessment contained in a prior application. Each such application for a grant shall describe the objectives of the project in relation to those special educational needs. It must demonstrate that the project has been sufficiently well planned to meet those objectives and that the project makes adequate provision for its implementation in an effective manner.

APPENDIX B

RAW SCORE DATA USED IN THE STUDY

TABLE 12

RAW SCORES FROM THE SLOSSON INTELLIGENCE TEST FOR THE
1973-74 EARLY CHILDHOOD PROGRAM

BOYS		GIRLS	
Pretest	Posttest	Pretest	Posttest
102	104	110	114
94	103	90	96
117	105	92	88
114	106	116	91
114	126	108	120
84	93	98	101
117	123	98	92
94	109	97	109
84	117	115	109
108	111	132	127
125	132	106	99

TABLE 13

READING RAW SCORES ON THE COMPREHENSIVE TEST OF
BASIC SKILLS FOR THE
1974-75 EARLY CHILDHOOD PROGRAM

<u>Experimental Group</u>		<u>Control Group</u>	
<u>Pretest</u>	<u>Posttest</u>	<u>Pretest</u>	<u>Posttest</u>
69	101	99	125
61	90	81	117
114	138	64	102
60	108	69	89
65	109	102	129
69	89	96	137
60	85	64	83
51	83	43	65
92	125	123	127
83	114	120	132
104	135	116	124
96	121	75	115
121	141	112	130
97	124	67	116
79	107	54	85
99	138	85	119
111	135	90	123
96	132	90	105
107	134	89	114
86	113	74	109
102	127	67	106
105	136		
102	118		
111	134		
74	110		
107	121		

TABLE 14

MATHEMATICS RAW SCORES FROM THE COMPREHENSIVE TEST
OF BASIC SKILLS FOR THE
1974-75 EARLY CHILDHOOD PROGRAM

<u>Experimental Group</u>		<u>Control Group</u>	
Pretest	Posttest	Pretest	Posttest
10	19	9	22
8	11	11	18
17	17	12	13
8	13	13	15
12	10	16	23
11	11	15	21
6	15	11	12
7	12	10	12
11	14	15	17
13	19	15	20
11	19	12	17
9	17	15	20
22	23	17	17
13	20	12	13
12	14	12	9
16	22	14	14
14	20	7	14
11	19	12	9
17	25	12	11
9	17	7	16
11	15	13	15
18	21		
21	24		
17	18		
12	19		
14	22		

TABLE 15
RAW SCORES FROM THE METROPOLITAN READINESS TEST
FOR THE
1974-75 EARLY CHILDHOOD PROGRAM

Experimental Group	Control Group
55	77
58	70
69	63
67	64
55	70
56	70
56	48
43	35
54	62
57	71
76	74
57	68
89	69
72	59
58	48
84	58
73	66
83	75
79	67
77	84
67	71
82	
70	
71	
54	
66	

TABLE 16

RAW SCORES FROM THE SLOSSON INTELLIGENCE TEST FOR THE
1975-76 EARLY CHILDHOOD PROGRAM

<u>Experimental School-based Group</u>		<u>Experimental Home-based Group</u>		<u>Control Group</u>	
Pretest	Posttest	Pretest	Posttest	Pretest	Posttest
102	121	115	125	115	115
100	129	98	129	111	114
121	129	102	125	119	119
115	121	115	160	98	115
125	127	109	113	96	109
90	116	110	110	123	119
109	144	96	109	102	108
112	136	120	155	110	109
110	127	100	103	85	88
102	114	103	101		
98	130	104	115		
120	141	85	98		
114	128	112	120		
87	110	125	129		
96	119	90	114		
104	107	122	116		

TABLE 17

RAW SCORES FROM THE DEVELOPMENTAL TEST OF VISUAL
MOTOR INTEGRATION FOR THE
1975-76 EARLY CHILDHOOD PROGRAM

Experimental School-based Group		Experimental Home-based Group		Control Group	
Pretest	Posttest	Pretest	Posttest	Pretest	Posttest
52	94	49	60	38	52
49	63	49	63	52	56
49	63	38	59	38	54
49	63	38	63	54	88
57	63	52	70	56	59
38	59	49	63	38	60
38	63	38	57	49	56
38	54	38	49	38	54
38	54	49	59	46	52
38	56	38	46		
38	59	38	49		
49	70	57	57		

TABLE 18

RAW SCORES FROM THE ILLINOIS TEST OF PSYCHOLINGUISTIC
ABILITIES: GRAMMATIC CLOSURE SUBTEST FOR THE
1975-76 EARLY CHILDHOOD PROGRAM

<u>Experimental School-based Group</u>		<u>Experimental Home-based Group</u>		<u>Control Group</u>	
Pretest	Posttest	Pretest	Posttest	Pretest	Posttest
12	20	15	19	12	18
13	17	7	11	10	15
13	16	7	11	11	16
7	12	7	12	12	17
15	18	7	16	8	10
12	21	12	16	13	15
10	15	10	17	4	9
10	16	13	17	8	12
7	20	8	20	7	9
7	19	13	16		
8	15	7	10		
7	17	8	11		
8	17	7	11		
7	13	10	13		
7	14	12	14		
8	20	8	7		

TABLE 19

RAW SCORES FROM THE BOEHM TEST OF BASIC CONCEPTS FOR THE
1975-76 EARLY CHILDHOOD PROGRAM

Experimental School-based Group		Experimental Home-based Group	
Pretest	Posttest	Pretest	Posttest
35	36	33	35
25	35	32	35
26	38	26	34
33	42	30	28
24	35	29	39
22	36	28	30
28	39	25	31
31	41	14	23
25	36	25	36
28	40	32	44
29	37	32	36
32	41	22	31
27	38	31	45
32	42	32	34
32	38	28	47
14	30	35	42
29	41	24	27
31	42	29	34
32	40	27	36
30	40	31	39